

Université de Montréal

**Synthetic Media and Modern Painting:
A Case Study in the Sociology of Innovation**

par

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Tome 1 de 2

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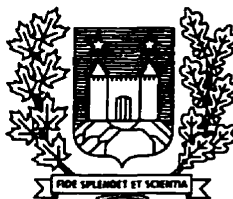
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**Synthetic Media and Modern Painting:
a Case Study in the Sociology of Innovation**

présentée par

Janet Lee Ann Marontate

a été évaluée par un jury composé des personnes suivantes:

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ABSTRACT

This study questions conventional assumptions about what constitutes artmaking, and who is involved with it, by focussing on relationships which have previously been largely invisible in both sociological and art-historical studies : contacts between artists, paintmakers, art conservators, chemists and various other experts on art-technical matters. The aim is to stimulate further reflection on participants in the "service areas of art" and through this to better understand their reciprocally constitutive relationships with the artistic phenomena they help produce and preserve.

The development of a group of new art materials in 20th-century North America -- synthetic painting media-- provides a point of access for observing these relationships. The study uses qualitative methods drawing on work by French structuralists, Quebec-based critical theorists and symbolic interactionists in an historical-comparative approach. Research is centered on a life story interviews supplemented by fieldwork and extensive archival research.

Accounts by paintmakers and artists reveal a collective process which cuts across disciplinary boundaries. Artists and small entrepreneurial paintmakers used new chemical products to create materials which satisfied aesthetic, political and economic preoccupations. Participants from the chemical industry, university research centers, museums, and government agencies as well as magazine writers and handbook authors played significant roles in the development, spread and eventual regulation of these new materials in Canada, the U.S. and Mexico.

The findings are organized in an analytical narrative progression of themes and case histories beginning with a consideration of Mexican muralists who interpreted art-technical issues in terms of socialist ideals. The study traces the emergence of technical issues as a means for arts administrators to control artistic production in state-funded New Deal public art projects. This provided an impetus for research on new materials

and efforts to set standards for art materials which continue to this day. Post-war enthusiasms for science and art led to the establishment of research centers on artists' paints and served efforts at professionalization in art conservation and paintmaking. Technical advice columns in mass art magazines and artists' handbooks chart changes in ideas about normative practices in both high and popular culture. Case histories of paintmakers, conservators and researchers are presented. The place of pioneers within the reference population of artists' colour manufacturers provides a basis for cross-cultural comparison. Finally in-depth oral history interviews with artists recognized as members of the avant-garde in the 1960s indicate ways technical knowledge was embedded in high culture discourse.

Thus this study presents new social dimensions of artmaking and a new perspective on the relations between art, technology and society in a particular socio-historical context. Oral testimony underlines the rich interplay of cultural practices in the appropriation of technical knowledge for the creation of individual and group identities. The findings provide insights into links between artistic practices, theories of art, other ideologies, economic preoccupations and more general social processes by studying the ensemble of art-technical work that helped the new paints and the art made with them achieve recognition as cultural innovations.

Résumé

Cette étude remet en cause les idées reçues sur ce qui constitue la pratique de l'art. Elle met l'accent sur les relations qui sont généralement invisibles dans les études sociologiques et en histoire de l'art, soient des contacts entre artistes, fabricants de matériaux d'artiste, conservateurs-restaurateurs de l'art, et d'autres experts techniques. L'objectif principal de l'étude est de provoquer une réflexion sur les participants dans les "aires de service de l'art" de façon à mieux comprendre leurs liens constitutifs et réciproques avec les phénomènes artistiques qu'ils aident à produire et à préserver.

Le développement d'une nouvelle catégorie de matériaux d'artiste en Amérique du Nord au vingtième siècle nous offre un lieu privilégié pour l'observation de ces relations diverses. Ces nouveaux matériaux -- les peintures aux médiums synthétiques à l'intention des artistes (comme les acryliques) -- sont fabriqués à partir de produits industriels modernes. Cependant, l'émergence de ces peintures en art ne semble pas être un cas d'imposition de la technologie par des forces commerciales externes. Au contraire, les représentations des fabricants de peinture et des artistes révèlent un processus collectif qui passe à travers des frontières disciplinaires conventionnelles. Des artistes et des petits entrepreneurs se sont emparés des nouveaux produits chimiques afin de créer des matériaux d'artiste qui satisfaisaient aux préoccupations esthétiques, politiques et économiques des artistes, des critiques et des mécènes. Des participants de l'industrie chimique, des musées, et des organismes Étatiques aux États-Unis, au Mexique et au Canada ont une place importante dans le développement, la diffusion et la réglementation éventuelle de ces nouveaux matériaux.

Même avant la production des peintures synthétiques spécifiquement à l'intention des artistes, des produits chimiques créés pour des utilisations industrielle ou commerciale ont été employés par des artistes. Ces peintures modernes sont profondément liées aux représentations de l'identité artistique et de la pratique de l'art en

Amérique du Nord à partir des années trente. Les représentations symboliques des couleurs d'artiste synthétiques sont multiples, mais le discours sur l'appropriation de ces matériaux en art les situent solidement dans le cadre des priorités artistiques des groupes concernés.

Ces matériaux ont été employés par des artistes avec des objectifs esthétiques et idéologiques divers. En art, les peintures synthétiques sont souvent associées à l'art de la haute culture, notamment aux mouvements stylistiques des avant-gardes New Yorkaises pendant l'époque de l'essor de l'art américain sur le marché international de l'art suivant la fin de la deuxième guerre mondiale -- surtout les mouvements de tendances abstraites et le *Pop Art*. Moins connues sont les expériences antécédentes avec ces nouveaux matériaux par les muralistes populistes et socialistes du Mexique, des États-Unis et du Canada.

Cette étude met l'accent sur une lecture des représentations du travail avec ces matériaux surtout aux États Unis entre 1930 et 1965 (moment où l'appropriation des peintures synthétiques est devenue une pratique moins novatrice). Les pionniers dans le développement et l'utilisation des ces peintures indiquent qu'il s'agit d'une époque importante pour la constitution des idées (théories de l'art, attitudes envers la technologie) et des structures sociales (réseaux de diffusion des connaissances techniques, cadres institutionnels, etc.) qui sont centrales pour la production et l'appropriation de ces peintures en art.

Le chapitre premier présente l'encadrement théorique et l'approche méthodologique qui en découle. Dans un premier temps nous expliquons les liens de ce projet avec certaines théories sociologiques de la production sociale de l'art, notamment le modèle de Pierre Bourdieu, et la théorie des mondes de l'art conçu par Howard Becker dans le cadre de l'interactionisme symbolique. Nous discutons également de l'apport des théories de l'esthétique de réception, ainsi que de la contribution des Études Culturelles Américaines à une reformulation de l'idée de

subjectivité dans les théories de la production artistique. Ensuite nous passons à un examen de quelques thèmes spécifiques qui sont étroitement liés à notre sujet de recherche, entre autres, les recherches de Raymonde Moulin et Natalie Heinich sur l'évolution du statut social de l'artiste qui nous offrent des points de repère dans une considération de la place de la technique dans le discours de l'artiste. Une réflexion sur la notion de l'innovation et sur sa signification pour l'étude des processus sociaux nous mène à la stratégie de recherche.

Notre méthodologie est axée sur une forme spécifique des histoires de vie -- les récits de pratiques. Cette approche s'inspire des études de certains sociologues critiques au Québec ainsi que des recherches ethno-sociologiques en France. Nous avons aussi recueilli des informations complémentaires par d'autres méthodes : entrevues courtes avec informateurs-clés, travail de terrain (observations dans les ateliers d'artiste et de conservation, dans les laboratoires, visites aux lieux de fabrication des peintures d'artistes, etc.), ainsi qu'un travail de recherche considérable dans les archives diverses au Canada, au Mexique, aux États-Unis et en Allemagne.

La majeure partie de la thèse présente les résultats de ces recherches sous forme d'une progression narrative de thèmes et d'études de cas. Par le biais du local nous espérons mieux comprendre les tendances plus globales observées dans les réseaux sociaux sous étude.

Chapitre 2 porte sur le premier exemple bien documenté de l'utilisation des peintures synthétiques par un artiste en Amérique du Nord -- le cas du muraliste Mexicain, David Alfaro Siqueiros. Son discours incendiaire sur la nécessité d'une appropriation des matériaux et des outils modernes lors de ses séjours aux États-Unis pendant les années trente juxtapose les objectifs esthétique, pragmatique et idéologique. Ici aussi nous considérons la place de l'expérimentation technique dans le contexte révolutionnaire des programmes d'art public Mexicains.

À l'instar des Mexicains, le Président Américain Roosevelt a mis sur pied des

grands projets artistiques dans le cadre des programmes d'aide sociale appelés la "New Deal" [le "nouvel repartage" ou la "nouvelle main" dans le sens des jeux de cartes] pendant les années trente. Chapitre 3 examine l'émergence des enjeux techniques en tant que moyens de contrôler la production artistique et analyse comment les discours sur les matériaux dans le contexte du mécénat public ont monté le décor pour l'adoption éventuelle des mediums synthétiques par des artistes-peintres. Ces projets ont aussi donné l'impulsion aux efforts de standardisation des couleurs d'artiste ce qui a amorcé des contacts entre artistes, fabricants de peinture d'artiste, conservateurs-restaurateurs, chimistes et gestionnaires des arts avant la deuxième guerre mondiale, contacts qui se poursuivent jusqu'à présent.

En même temps, la ville de New York est devenu un centre artistique important. Mais tous les artistes aspirants n'ont pas pu vivre de leur art; certaines sont devenus fabricants de peinture pour artiste. Le chapitre 4 présente les cas de deux pionniers dans le développement des medias synthétiques pour les artistes-peintres : Len Bocour et Sam Golden. Leurs histoires provoquent une réflexion sur les rapports complexes entre les identités personnelles et professionnelles dans un examen des relations entre fabricants et artistes.

Après la deuxième guerre mondiale la confiance répandue à l'autorité de la science se manifeste dans la mise sur pied de deux centres de recherche voués au développement des matériaux synthétiques pour les artistes: l'un à l'Institut Polytechnique à Mexico et l'autre à l'Institut Mellon à Pittsburgh (en collaboration avec la Galerie Nationale à Washington). Au chapitre 5 nous étudions l'évolution de ces deux instituts qui démontre deux approches radicalement différents. Le premier, un atelier mené par l'artiste-chercheur-fabricant José Gutiérrez, a mis l'accent sur les projets d'artistes promouvant une diffusion internationale des formules par le biais des réseaux d'artistes. L'autre, dirigé par Robert Feller, chimiste de formation, a misé sur des recherches fondamentales (sur les produits industriels de base employés dans les

nouveaux matériaux d'artiste) dont les résultats étaient publiés dans les revues scientifiques.

Au chapitre 6, nous regardons de près le thème de la science, de la standardisation et des normes en matière de techniques artistiques sous différents aspects. Ce chapitre se divise en quatre sections. D'abord nous présentons le cas d'encore un pionnier dans le développement des peintures synthétiques pour artiste : Henry Levison, chimiste, fabricant, et chercheur qui a joué un rôle central dans l'instauration des normes de fabrication des couleurs d'artiste aux États-Unis. Son travail est très lié aux recherches dans le domaine de la conservation de l'art où les premières expériences scientifiques avec des applications artistiques des matériaux synthétiques ont été entreprises. Dans une deuxième section nous traçons les grandes lignes de l'émergence des approches scientifiques en conservation de l'art par rapport à la professionnalisation dans le champ qui sont intimement liés aux recherches sur les matériaux modernes. En même temps, on constate la prolifération des manuels d'artistes et des articles sur les techniques dans les revues d'art qui nous donne accès aux idées sur les pratiques normatives et novatrices. À la troisième section nous étudions les transformations du discours des "experts" en matière des techniques de l'art sur les matériaux modernes à partir d'un examen de quatre grandes revues américaines et d'un corpus de textes pour artistes. Finalement nous examinons la collaboration de ces différentes catégories d'agents avec des artistes dans le cadre des associations volontaires vouées à l'établissement des normes pour les couleurs d'artiste.

Chapitre 7 regarde la place des fabricants de peintures synthétiques dans l'univers des fabricants de couleurs d'artiste. Nous présentons ici les critères retenus pour la constitution de la population de référence. Le chapitre met l'accent toujours sur l'Amérique du Nord mais présente quelques autres profils des fabricants de la Grande-Bretagne, de l'Europe ainsi que de l'Australie dans une étude comparative qui s'étend jusqu'aux années quatre-vingts. Tel qu'expliqué, notre attente du départ était de trouver

les fabricants de peintures synthétiques dans une situation minoritaire. Or, ils font la majorité et, par conséquent, nos fabricants-pionniers constituent en quelque mesure une avant-garde dans le champs de la fabrication des couleurs d'artiste.

Au Chapitre 8, nous regardons de près les représentations d'une sélection d'artistes consacrés par le marché de l'art international: Kenneth Noland, Jules Olitski, Larry Poons, Roy Lichtenstein, Guido Molinari, Claude Tousignant, Yves Gaucher and Alex Colville. Tous ces artistes ont employés les couleurs acryliques d'artiste relativement tôt. Nous étudions aussi la réception critique des oeuvres faits avec ces nouveaux matériaux, notamment en examinant le discours du critique Clement Greenberg. Les témoignages de ces artistes nous accordent un autre optique sur les modalités d'insertion des connaissances techniques dans les discours et dans des pratiques en art.

Enfin nous présentons quelques remarques sur les réseaux de diffusion des connaissances techniques en art, sur la place du travail de l'artiste dans ces réseaux, et sur les implications du cas spécifique sous étude. Nous essayons de faire ressortir une vue d'ensemble du travail sociale du groupe qui a fait de sorte que certains matériaux et l'art qu'ils ont servi à faire soient reconnus comme innovations. De cette façon nous espérons provoquer une réflexion sur quelques nouvelles dimensions de la création artistique dans l'espoir de mieux comprendre les liens complexes entre la circulation des connaissances techniques, les pratiques artistiques, les théories de l'art, les autres idéologies, des préoccupations économiques et des processus sociaux plus généralement.

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To the memories of my mother

-- Doris Leona Cornwall Marontate--

and Rosie

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"In the special economy of scholarship,
I feel rich as I count my debts."

-- Barbara Melrose, *Engendering Culture*.

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CHAPTER 1 – INTRODUCTION

"We must question those ready-made syntheses, those groupings that we normally accept before any examination, those links whose validity is recognized from the outset; we must oust those forms and obscure forces by which we usually link the discourse of one man with that of another; they must be driven out from the darkness in which they reign. And instead of according them unqualified spontaneous value, we must accept in the name of methodological rigour, that, in the first instance, they concern only a population of dispersed events."

Michel Foucault.¹

Organizing Principles

The guiding principle of this study is to question the authority of conventional assumptions about what constitutes artmaking, and who is involved with it. Here the focus is on relationships which have previously been largely invisible in both sociological and art-historical studies : contacts between artists, paintmakers, conservators, chemists and various experts on art materials or techniques.² The research relies heavily on biographical information about the activities of individuals in particular places and times and under specific socio-historical conditions. Discursive links provide connections amongst these dispersed events revealing patterns, structures and processes which as

¹. Il faut remettre en question ces synthèses toute faites, ces groupements que d'ordinaire on admet avant tout examen, ces liens dont la validité est reconnue d'entrée de jeu: il faut débusquer ces formes et ces forces obscures par lesquelles on a l'habitude de lier entre eux les discours des hommes: il faut les chasser de l'ombre où elles règnent. Et plutôt que de les laisser valoir spontanément, accepter de n'avoir affaire, par souci de méthode et en première instance, qu'à une population d'événements dispersés." Foucault, Michel. *L'archéologie du savoir*. Paris: Gallimard, 1969. p.32. Translation by A.M.Sheridan Smith cited in Leja, Michael. *Reframing Abstract Expressionism. Subjectivity and Painting in the 1940s*. New Haven, Conn.: Yale University Press, 1993, p. 18.

². References to such relations are few indeed. In sociological works we have not located more than a few pages alluding to them. Howard Becker mentions material resources in passing and Albert Boime has briefly treated dealers in art supplies. In art historical studies, aside from the famous example of Père Tanguy whose colour shop provided a meeting place for Post-Impressionists in the 19th century, selected instances of relations between artists and chemists or paintmakers (notably in the cases of artists Yves Klein and Morris Louis) are covered primarily in the context of studies related to conservation and restoration of artists' works and will be treated later in the text. Becker, Howard. *Art Worlds*. Berkeley: University of California Press, 1982, especially p. 71-76; and Boime, Albert. "Les Hommes d'Affaires et les Arts en France au 19e siècle", *Actes de la recherche en sciences sociales (Les fonctions de l'art)*. no. 28, June 1979, pp. 57-75, especially pp. 70-71.

Foucault warns us must constantly be critically interpreted as part of a necessarily fragmentary vision. Since this thesis represents the first construction of the history of this particular social network, it risks occupying the dangerous position of ossifying observations rather than provoking discussion of them. On the contrary, the hope here is to stimulate further reflection on participants in the "service areas of art" and through this to better understand their reciprocally constitutive relationships with the artistic phenomena they help produce and preserve.

The Particular Case

The development of a group of new art materials in twentieth-century North America provides a point of access for observing these relationships. These new materials -- synthetic painting media (such as acrylics)-- are themselves made using commercial products of the industrial age developed primarily in chemical research laboratories of large corporations, like Du Pont, Rohm and Haas, Union Carbide, and General Electric.³ Yet the emergence of synthetic paints in art does not appear to have been an externally-generated imposition of technology on the artistic field by commercial forces; on the contrary, accounts by paintmakers and artists portray the introduction of the new paints as an act of appropriation on their part. The development and diffusion of synthetic paints for artists was made possible by communications among several 'fields', and reveals a collective process which cuts across conventionally defined disciplinary boundaries. Participants from the chemical

³. The terms "synthetic paint" and "synthetic painting media" refer here to paint using chemical materials such as ethyl silicates, vinyl acetate, polyvinyl chloride resin, and acrylic resins which were developed primarily in the twentieth century. In addition, these terms refer to enamels made with pyroxylin (a semi-synthetic resin with a nitrocellulose base) which was discovered during the 19th century but not widely used as a coating until the twentieth century. One of the largest categories of synthetic paints used in art are the so-called "water-compatible" or "water-borne" acrylics, commonly referred to as "acrylic (polymer) emulsions" although strictly speaking they are dispersions. For the purposes of this study the synthetic character is established by the medium, not the pigment.

industry, university research centers, museums and government agencies (in the United States, Mexico and Canada) played significant roles in the development, spread and eventual regulation of these new materials. Nonetheless, synthetic painting media specifically produced for artists appear to have emerged primarily due to the collaborative efforts of what Howard Becker has called "participants in art worlds".⁴ Artists and small entrepreneurial paintmakers used new chemical products to create materials which satisfied aesthetic, political and economic preoccupations of artists, critics and patrons.

To be sure, even before synthetic paints were produced specifically for artistic use new chemical products created for industrial and home use were employed by artists. These modern paints are deeply bound up in representations of artistic identity and practice in North America, beginning at least in the 1930s. As the study will show, the discourse about synthetic painting materials represents them as having multiple meanings within several different interpretative frameworks but firmly situates the new paints within artistic priorities for the groups concerned.

Synthetic painting media were used by painters with varied aesthetic goals and political stances. In art, synthetic paints have frequently been associated with various high-culture American-based stylistic movements which gained international recognition in the period immediately following World War II, for example, abstract expressionism, color field painting and pop art, notably in the work of Jackson Pollock, Morris Louis, Kenneth Noland, Jack Bush, Roy Lichtenstein and Helen Frankenthaler. Less known is the earlier involvement of populist muralists from Mexico, the United States and Canada in the introduction of these new materials in painting, in particular David Alfaro Siqueiros and his followers.

This thesis will focus on a reading of accounts of work with these new materials

⁴. Becker 1982.

conducted primarily in the United States from the early 1930s to the mid 1960s (when synthetic paints for artists began to be very widely used). In some instances the social networks extend to Mexico, Canada and Europe. Pioneer users and makers of the first generation of synthetic paints for artists represent this period as crucial for the formation of ideas (i.e. theories of art, attitudes to technology) and social structures (i.e. information-sharing networks and institutional frameworks) central to the production and diffusion of these new paints. The aim here is to provide insight into links between artistic practices, theories of art, other ideologies, economic preoccupations and more general social processes by studying the ensemble of creative cultural work that helped the new paints and the art made with them achieve recognition as innovations.

Structure of the Presentation

The research will be presented in the following manner. First, by means of introduction we will begin with a brief general discussion of some central theoretical issues which inform and motivate this study as well as attendant methodological choices. Fundamental notions in existing scholarship about the nature and structure of artistic endeavor provide a framework for thinking about artmaking, but also have posed barriers since they frequently imply that technique and materials are socially or aesthetically irrelevant. It will be argued that this situation may be largely accidental, a consequence of the acceptance of conventional wisdoms embedded in discourse reflecting historic struggles by artists for recognition as an occupational group. After all, even the study of mediation and reception as crucial processes for understanding art is relatively recent. The particular relevance of technical innovation to twentieth century modernist painting in North America makes this a useful example for the reassessment of the place of instrumental knowledge in artistic practices. As a first extended examination of the area, the study uses qualitative methods, centered on a particular

form of life story interviews known as accounts of practices.⁵ These are supplemented with a wide range of sources of information including topical interviews with key informants and observations made during visits to artists' studios, paintmaking factories, art supply shops, and conservation studios. As well the study relies heavily on a large variety of written sources, notably, archival collections of personal papers, company records, government archives, trade literature, art magazines, artists' technical manuals and publications in art conservation.

The bulk of the text is consecrated to presenting findings of this empirical work. The findings are organized in an analytical narrative progression of themes and case histories highlighting local events in an effort to understand and explain the more global trends observed in the social networks studied.

Chapter 2 treats the earliest well-documented use of synthetic media by a prominent artist in North American painting. Here we consider the flamboyant juxtaposition of aesthetic and pragmatic goals with socialist claims regarding the emancipatory potential of modern synthetic paints in accounts by the influential Mexican muralist David Alfaro Siqueiros about his initial work with synthetic media in the 1930s during visits to the U.S.. His discourse is considered within the context of the socially-conscious art promoted by Mexican muralists who sought new materials and techniques to bring art outdoors to the people.

During the 1930s, inspired by the Mexican example, state-funded art projects were launched as part of the so-called New Deal programmes in the U.S. to counter the effects of widespread economic hardship and social upheaval caused by the Great Depression. Chapter 3 discusses the emergence of technical issues as a means to control artistic production in these New Deal art projects and analyzes how discourse

⁵ Bertaux, Daniel and Isabelle Bertaux-Wiame. "Life Stories in the Bakers' Trade", in Bertaux, Daniel (editor). *Biography and Society. The Life History Approach in the Social Sciences*. Beverly Hills: California, 1981, pp. 169-189.

about materials in the context of public patronage helped to set the stage for the subsequent adoption of synthetic painting media by artists. The projects provided an impetus for efforts at standardization and institutionalization of art materials which initiated contacts between artists, paintmakers, conservators, curators, arts administrators and chemists before the U.S. entered World War II.

Simultaneously in New York City, a vibrant art community provided an important milieu for early experiments with new media and the city attained international prominence as a center for innovative painting in the post war years. Of course not all aspiring painters in the city managed to make a living from their art; some became paintmakers. Chapter 4 considers case studies of two pioneers in the development of synthetic media for artists with close connections to artists and multifarious involvements with art: Len Bocour and Sam Golden. Their stories raise questions about the place of paintmakers in the making of modern art and the intricate interplay of personal and professional identities in relations between artists and paintmakers.

Post-war enthusiasms for the application of scientific methods to art were evident in the support for two research centers devoted to the study of innovative new painting materials, one at the Polytechnic Institute in Mexico City and the other in the U.S.. The two centers evolved in radically different directions but both served to enhance communications between artists, paintmakers, conservators and chemists as Chapter 5 explains. The workshop in Mexico City, led by the New-York-trained artist, researcher, handbook author and innovative paintmaker José Gutiérrez, gave precedence to artists' painting projects, promoting the international dissemination of formulas for synthetic paints through artists' networks. Robert Feller of the National Gallery of Art Project for the Study of Materials of the Artist and Conservator at the Mellon Institute gave priority to fundamental research on industrial products used in new formulas which he presented in scholarly publications written for a specialized elite

of scientifically oriented technicians and conservators.

In Chapter 6 key figures and organizations related to the propagation of information about synthetic painting media and their eventual regulation are presented. As art by living artists became an increasingly valuable cultural and economic commodity interest grew in the quality of art materials and conservation techniques. Proponents of scientific method led the push towards establishing testing methods and standards for paint materials. Not incidentally many were also innovators in the development and use of synthetic painting media for art and in art conservation, since the search for new improved materials was part of the scientific research agenda at the time. The chapter begins by presenting a profile of pioneer paintmaker-chemist Henry Levison whose story differs from the accounts in earlier chapters of other innovative artists' colour manufacturers because of his emphasis on science rather than art. His work was closely related to conservation concerns about permanence. In art conservation, where the earliest research on applications of the new media to art was undertaken, the trend to scientific approaches was intimately connected to professionalization of the occupation of conservator. Efforts to establish normative practices in artmaking based on scientific principles of conservation began to be communicated to living artists through technical advice columns in art magazines and a rising number of artists' manuals. At the same time the vogue for technical innovation in painting was manifest in rapidly changing studio practices of artists. In art magazines and handbooks experimentation with the new media in artistic circles was reported and debated. The transformation of discourse about these modern materials in technical advice columns and artists' handbooks provides information about changing attitudes towards materials, at times echoing the concerns of conservators but not always. The coverage of art-technical questions in art magazines and texts also provides insights about ways in which technical issues (particularly those related to the new media) were appropriated by artists for the construction of their identities. Meanwhile, voluntary

associations, mostly founded after World War II, provided a place for information exchange and efforts to bring about changes in art materials in order to assure greater durability of the art produced. Ultimately suspicions about high technology and the negative effects of industrial chemicals on health and the environment provided a complementary impetus for collaborative efforts of artists, paintmakers, conservators and chemists in setting basic standards for artists' paints, both traditional and new.

Chapter 7 looks at how pioneers in synthetic paintmaking fit into the larger universe of artists' colour manufacturers. It presents an overview of the reference population of other paintmakers during the period from about 1945 through the 1980s, discussing sources and biases in the sample. Profiles of these paintmakers concentrate on other pioneers in the development of synthetic media for artists' use in North America (Canada, the U.S. and Mexico), but cases from Britain, Continental Europe and Australia provide a basis for cross-cultural comparison. As we explain, the expectation at the beginning of the research was that synthetic paintmakers would constitute a relatively small fraction of a much larger body of manufacturers. This proved incorrect. They were the majority, putting the pioneers in the development of synthetic media in the position of being an avant-garde in artists' paintmaking.

Finally Chapter 8 considers the views of highly successful artists consecrated by the international art market who were early partisans of acrylic paints made expressly for artists in the 1950s and early 1960s. It is based on in-depth oral history interviews with eight artists about their techniques and use of materials: Kenneth Noland, Jules Olitski, Larry Poons, Roy Lichtenstein, Guido Molinari, Claude Tousignant, Yves Gaucher and Alex Colville. As well, the early reception of the new paints in formalist art criticism is discussed through an examination of the place of critic Clement Greenberg in reception of the new media. The accounts of the artists provide another perspective on the ways technical knowledge and innovative use of new materials are embedded in (and abstracted from) high culture discourse about artistic practice.

Thus the study of the development, diffusion and appropriation of synthetic paints for artists provides a means to examine new social dimensions of artmaking.

Theoretical Underpinnings

"The common character which unites the art of individuals at a given time and place is hardly due to a connivance of the artists. It is as members of a society with its special traditions, its common means and purposes, prior to themselves, that individuals learn to paint, speak and act in the current manner. And it is in terms of changes in their immediate common world that individuals are impelled together to modify their no longer adequate conceptions."⁶

Theories of the Social Production of Art and How this Project Fits

Studies about who makes art must necessarily begin by considering who decides what is art. From our perspective, understanding the social processes and structures which define art is an essential first step in the study of artmaking.⁷ The recognition of art and artists is accomplished through collective processes of mediation and reception.

Various models have been proposed in efforts to formulate the relationships involved with the recognition of art and artists. The models themselves draw upon various assumptions about the nature of human social activity and divergent epistemological goals which are embedded in more general sociological theories (ranging from Marxist structuralism through symbolic interactionism and beyond).⁸

⁶. Shapiro, Meyer. "The Social Bases of Art". Shapiro, M. *Social Realism. Art as a Weapon*. New York: Ungar. 1973, pp. 120-127.

⁷. The idea of the social production of art is a basic premise in sociology of art. Zolberg provides an extensive survey of English-language literature in the area to about 1989 and considers work in other languages as well. Zolberg, Vera. *Constructing a Sociology of the Arts*. Cambridge: Cambridge U. Press, 1990. See also Balfe, Judith. "Moving Toward a New Paradigm on Social Sciences and On Social Sciences and the Arts: Some Reflections on Conference Presentations", in Robinson, John (editor). *Social Science and the Arts 1984: A State-of-the-Arts Review from the Tenth Annual Conference on Social Theory, Politics and the Arts*, College Park, U. of Maryland College, October 1984. New York : U. Press of America, 1985, pp. 5-16.

⁸. For example, Janet Wolff presents a careful application of Marxist-inspired analysis to artistic production. Wolff, Janet. *The Social Production of Art*. Macmillan Education; Leeds. 1981.

Two of these very different sociological approaches to the study of art have been particularly formative in the development of this study and have provided key concepts used throughout : the symbolic interactionist model of art worlds proposed by Howard Becker and the neo-structuralist formulations of the field of cultural production by Pierre Bourdieu.

Becker's theory sets forth a view of patterns of cooperation amongst people who make art. He calls these people "participants" and uses the term "art worlds" as a way of denoting

"the network of people whose cooperative activity organized via their joint knowledge of conventional means of doing things, produces the kind of art works that art world is noted for."⁹

A specific application of symbolic interaction theory, Becker's model focuses on the dynamic relations between people and the world. Symbolic interaction theory has its philosophical roots in American pragmatist philosophy which sees people as actively involved in the creation of their reality through the exercise of thoughtful choices based on experience and utility. In this model, people are able to think and interpret the social world and they can affect their own conditions. They develop both individual and personal identities through interaction with others, primarily on a cooperative basis. Becker's theory allows for the possibility that people do not function in just one social world but in many simultaneously. Furthermore in the case of art he considers the existence of more than one art world, thus including folk art, naive art and outsider art on the same footing with the art of "integrated professionals" (practitioners of high culture art). Through a system of conventions participants in art worlds define what is art within the context of the shared values and norms of that particular art world. This is not to say that no conflict exists within art worlds about defining, labelling and making art. For example, as Becker has pointed out, confusion can occur between

⁹. Becker 1982, p. x.

market values and aesthetic values.¹⁰

Becker's model offers valuable concepts for looking at the relations between various types of participants in artmaking in terms of their contributions to collective activity on a microscopic level. It also provides a way to consider the activities of amateur painters and folk artists without ranking them on the same scale as artists who make work for major museums or the international art market. However, it is not much help in explaining inequalities amongst the participants within art worlds, nor does it come firmly to terms with inequalities between different types of art.

Pierre Bourdieu on the other hand provides powerful tools for looking at the formation of inequalities and boundaries. Bourdieu is a prolific author and the interpretation of his many works is hotly disputed but to ignore his work here for fear of oversimplification would be to misrepresent the profound impact it has had on the evolution of this project. What follows must be considered a conscious simplification of a particular reading of salient points in his *oeuvre* which are of interest for this study.

In Bourdieu's accounts works of art are constituted as symbolic goods by "agents" in "the field of cultural production".¹¹ To understand artistic creation, he insists on the necessity of looking beyond the individual artist by studying the whole set of relations and structures involved in endowing art with cultural value.¹² In this view the field of artistic production is a universe of belief with its own history and rules.¹³ Yet the position of the artist in the artistic field is not merely determined by internal

¹⁰ Becker, Howard (trans. Isabelle de Lajarte). "La Confusion des Valeurs," Menger, P.-M. and Passeron, J.-C. (editors). *L'art de la Recherche. Essais en l'honneur de Raymonde Moulin*. Paris: Documentation Française, 1994. pp. 11-27.

¹¹ Bourdieu, Pierre. "La production de la croyance: contribution à une économie des biens symboliques", *Actes de la Recherche en Sciences Sociales*, 13, February 1977, pp. 3-43.

¹² Bourdieu, Pierre. "Quelques propriétés des champs", and "Mais Qui a créé les créateurs?" *Questions de sociologie*, Paris: Minuit, 1980, pp.113-120 and 207-221.

¹³ Bourdieu, Pierre. (ed. Randall Johnson). "Field of Power, Literary Field and Habitus" and "Principles for a Sociology of Cultural Works" (trans. Claude Du Verlie), *The Field of Cultural Production*, New York: Colombia University Press, 1993, pp. 161-191

processes within the field (such as a division of labour) but also by the artist's *habitus* and concomitant cultural capital. The interpretation of both these terms is again disputed but they have been used evocatively to analyze the construction of high culture institutions and the validation of certain forms of artist expression as cultural capital.¹⁴ The notion of *habitus* is particularly complex but central to understanding the individual's position within the larger field of power relations in society as a whole. For example, in the case of art, the individual artist's *habitus* is established by a combination of the social conditions and attributes of the individual (such as family background and education) which are interconnected with the individual's position in the artistic field (and partly determined by how powerful the individual is within the artistic field).¹⁵ In other words, according to this model, people do not have limitless choices and are partly constrained to work within a set of structures and processes which both dominate them and provide conditions of possibility for action. Yet, it is important to recognize that this model is not totally deterministic. Although people have predispositions towards practices by virtue of their *habitus* their actions are never totally products of their *habitus*.¹⁶

Many of Bourdieu's works emphasize the ways in which structures, practices and processes create distinctions socially.¹⁷ In these works his analysis seems to implicitly accept the notion of a single cultural hierarchy in what is sometimes called a

¹⁴ See for example, Fournier, Marcel and Michèle Lamont. "Présentation", *Sociologie et Sociétés. La Culture comme Capital*, volume XXI, no. 2, October, 1989, pp. 5-8; and Fournier, Marcel and Lamont, Michèle (editors). *Symbolic Boundaries and the Making of Inequality*, Chicago: University of Chicago Press, 1992.

¹⁵ Bourdieu, Pierre. "Habitus, code, et codification", *Actes de Recherche en Sciences Sociales*, 64, September 1986, pp. 40-44.

¹⁶ Bourdieu, P. (trans. R. Nice) *Outline of a Theory of Practice*, Cambridge: Cambridge U. Press, 1977. (Note this is a substantially revised version of the French-language original containing additional references to artistic practice.)

¹⁷ He has used these ideas to great effect in studying taste, and in literary analysis. Bourdieu, Pierre and Darbel, Alain (with Dominique Schnapper). *L'amour de l'art. Les musées d'art européens et leur public*. Paris: Minuit, 1969; and Bourdieu, Pierre. *Les Règles de l'Art. Genèse et Structure du Champ Littéraire*. Paris: Seuil, 1992.

"high culture model." The utility of such high culture models has been called into question by U.S. scholars in particular because it seems grounded in a monolithic Eurocentric vision of class and race, which fails to take into account adequately the cultural diversity of experience elsewhere in the world.¹⁸ However, sociologist Paul DiMaggio has built on these basic ideas in historical studies of how urban elites in the United States developed institutions that defined certain kinds of aesthetic culture as prestigious to legitimate their position in society and to reinforce their dominance.¹⁹ Serge Guilbaut has gone further to explain the success of certain styles of U.S. painting as a manifestation of liberal ideology and its role in U.S. cultural imperialism.²⁰

For our study, the high culture model and the distinctions that it implies between certain artists and others, or between them and painters, for example, are useful in analyzing the importance of a highly visible elite for the validation of painters' innovations and for the reception of new materials by other artists, critics and publics. Bourdieu's theories thus provide a macro-level formulation for studying power relations and the processes through which art is consecrated by dominant cultural forces. Yet, in our study, this high culture model is conceived as only one variant of the many different art worlds which co-exist and which produce art.

The issue of the interface between high culture, and other forms of culture related to art (popular culture, mass culture, folk culture and so forth) cannot be dismissed without mentioning its connections with status distinctions. Much research has been devoted to trying to understand taste in art as a manifestation of class or status

¹⁸. Fiske, John. "U.S. Cultures, European Theories", *Power Plays, Power Works*. London: Verso, 1993, pp. 53.

¹⁹. DiMaggio, Paul. "Cultural Boundaries and Structural Change" in Lamont and Fournier 1992, pp. 21-57; and DiMaggio, Paul. "Cultural Entrepreneurship in Nineteenth-Century Boston: The Creation of an Organizational Base for High Culture in America", in Collins, Randall *et al. Media, Culture and Society. A Critical Reader*. London: Sage, 1986, pp. 194-211.

²⁰. Guilbaut, Serge (trans. Arthur Goldhammer). *How New York Stole the Idea of Modern Art. Abstract Expressionism, Freedom, and the Cold War*. Chicago: U. of Chicago, 1983.

distinctions.²¹ The terms high-brow, middle-brow and low-brow, used to define taste cultures, refer to this taste/class relationship but also indicate the observation that society, particularly in North America, is not stratified in such a way as to make an artform totally the property of one status group alone. Thus people who have high-brow tastes (that is, taste for high culture art) are not necessarily in dominant positions in society and vice versa.²² Furthermore, tastes and art vary according to their place and time, as does the relative authority of institutions and other factors in determining fashions in both elite and popular art forms.²³ These patterns observed in studying artists, their mediators (gallery owners, curators and critics) and their audiences (collectors and the public at large), show that distinctions between art forms and the taste cultures associated with them are not static. These observations by other researchers of changing patterns in the mediation and reception of art prompted us to look for similar transformations in relations between artists, paintmakers, and conservators in our study.

A problem in using the ideas of Becker and Bourdieu together is that they represent very different views of human nature and society. On the one hand, Becker's voluntaristic vision depicts a participatory basis for social cohesion in a society based on cooperation and collaborative endeavor. On the other hand, in Bourdieu's model, power relations dominate as boundaries and inequalities are created by people within structures which partly define and constrain them but which they help to make.

21. See for example: Gans, Herbert. *Popular Culture and High Culture. An Analysis and Evaluation of Taste*. New York: Basic Books, 1975 and Halle, David. *Inside Culture. Art and Class in the American Home*. Chicago: University of Chicago, 1993.

22. Levine, Lawrence. *Highbrow/Lowbrow: The Emergence of Cultural Hierarchy in America*. Cambridge, Mass.: Harvard U. Press, 1988.

23. Crane's study of changes in elite painting highlight transformations in the social process of recognition over time. Blau's research has shown popular culture and mass culture are not as universally accessible (and by extension not so democratic) as previously assumed. Crane, Diana. *The Transformation of the Avant-Garde. The New York Art World, 1940-1985*. Chicago: University of Chicago, 1987; Blau, Judith. *The Shape of Culture. A Study of Contemporary Cultural Patterns in the United States*. Cambridge, Mass.: Cambridge U. Press, 1992

Recent approaches in cultural studies and critical theory have suggested a way out of the quandary posed by these apparently irreconcilable differences. New formulations of subjectivity represent both collaborative work and conflict as inherent in the human and social condition.²⁴ As well critical theory about distinctions of cultural groups has inspired applied research which clarifies how shared values and traditions are maintained and transformed in specific socio-historic contexts.²⁵ In other words, different principles for activity may apply in social relations depending on specific circumstances, sometimes involving collaborative participation and at other times motivated by conflict and boundaries between groups. For example, in our study different patterns may be expected in observations of relations amongst painters, at times cooperative and at others competitive, depending on the specific configuration of events and circumstances.

Theories from sociology thus inform our basic approach. Another major influence on our way of looking at relationships in terms of "the social production of art" has come out of theories of reception developed primarily for the study of literature.²⁶ Although they resemble sociological approaches because they depict the process of definition of the work of art as social, theories of the aesthetics of reception

²⁴ Jameson and Lyotard present two different views of the position of the individual in the postmodern condition. Cultural observer bell hooks [sic] places cooperative social impulses within the context of a society dominated by a conflicted and oppressive racist patriarchy. Grossberg *et al* provides a selected of the application cultural studies in the politics of difference. Jameson, Frederic. *Postmodernism or the Cultural Logic of Late Capitalism*. Druham: Duke U. Press, 1991; and Lyotard, Jean-François. *Le postmoderne expliqué aux enfants*. Paris: Galilée, 1988; Hooks, Bell. *Outlaw Culture. Resisting Representations*. New York: Routledge, 1994; and Grossberg, Lawrence, Nelson, Cary and Treichler, Paula. *Cultural Studies*. London: Routledge, 1992.

²⁵ See for example, Fournier, Marcel. *L'Entrée dans la Modernité. Science, Culture et Société au Québec*. Laval: Éditions Saint-Martin, 1986; Couture, Francine (editor). *Les Arts Visuels au Québec dans les Années Soixante. La Reconnaissance de la Modernité*. Montréal: VLB, 1993; and Bernier, Léon and Perrault, Isabelle. "L'artiste et l'oeuvre à faire". Québec: Institut Québécois de Recherche sur la Culture, 1985.

²⁶ Bolecki, Włodzimierz. "L'espace socio-culturel et la lecture", *Acta Universitatis Wratislaviensis : Romanica Wratislaviensis*, 635. Wrocław, 1983, pp.73-81; Jurt, J. "Introduction", *La réception de la littérature par la critique journalistique: lectures de Bernanos 1926-36*, Paris: Jean-Michel Place, 1980, pp. 20-21.

reflect humanistic ways of looking at art, adding a refreshing perspective which is much more centered on looking at the work of art itself.²⁷ A central notion in theories of reception is that the production of a work of art is only achieved through its reception and the successive interpretations and reinterpretations of the work over time.²⁸ The work of art is thus to some extent an open entity, yet the reception of the work concerns not only the expectations of the audience but also qualities which are inscribed in the work itself.²⁹ For example, certain forms of art can contain codes which communicate to specific audiences. The point here which is important for our study is that reception is a necessary part of the creative process, but the art itself is not inconsequential to the process of reception.

All of these theories tend to emphasize symbolic aspects of the creation of art, such as its importance for social identities or its function in creating boundaries. However the technical or material aspects of the creation of objects or events which become identified as art also have social dimensions.

The Place of Technique in Discourse about Art and the Social Position of the Artist: The Artist vs. Artisans

Materials and techniques occupy an uneasy space in discourse about art.³⁰ This has much to do with the history of ideas about the image of artists in Western society.³¹

27. As well theories of reception draw heavily on communication theory. Cauquelin, Anne. *L'art contemporain*. Que Sais-je? No. 2671. Paris: Presses Universitaires de France, 1992.

28. These changing interpretations can themselves provide insights into transformations in society. See for example Akrich, Madeleine. "Le polyptique de Beaune : la construction locale d'un universel". *Sociologie de l'art*. (réd. Raymonde Moulin) Paris: La documentation française 1986. pp. 425-432.

29. Jauss uses the term "horizon of expectations" (*horizon d'attente*) to indicate that the expectations of the observer are not limitless. Jauss, H. R. "Esthétique de la réception et communication littéraire", *Critique*, 413 (October 1981), pp. 1116-1130.

30. Marontate, Jan. "The Sociology of Art Materials. Materials and Meanings", *McKay-Lodge Conservation Report*, Issue 7, 1994, pp. 1-16.

31. An exception is the extremely well-documented history of discourse about the status of the artist in France since the late 18th century. See for example, Heinrich, Nathalie. *Du Peintre à l'Artiste. Artisans et Académiciens à l'âge Classique*. Paris: Minuit, 1993.

Raymonde Moulin and Natalie Heinich have analyzed changes in the social position of the artist in European traditions starting with the observation that painters in mainstream occidental art traditions worked as a group to abandon the status of artisans, insisting that their work fell within the definition of "learned culture" (*culture savante*) as a form of abstract thinking.³²

In aid of this push for increased social status discourse on the artist has tended to distinguish between the practice of art and manual (or instrumental) aspects of making artworks, at least since the Renaissance. In France during the 17th century, artists repudiated the importance of the mechanical or manual character of painting; following the high culture model of the liberal professions they fought for and won their rights to a place in the French Academy with the establishment of the Royal Academy of Painters and Sculptors in 1648. The practice of art was not considered merely an manual activity, but an intellectual one as well. During this period there was a profound change in the social symbolism which reflects transformations in social status of the artist: the medieval artist was an artisan with the astrological sign of Mercury "patron of cheerful, lively men of action", whereas the Renaissance artist was "born under the sign of Saturn . . . contemplative, meditative, brooding, solitary. . . ".³³

These group efforts to raise the social status of the artist continued and in France for a time they did result in the achievement of an institutionalized artistic profession with the power to designate who could be considered an artist. However this situation did not last, the power of the French Academy was eroded by changing socio-economic conditions which gave rise to new art markets making it possible for artists to survive outside of the Academic framework.³⁴

³². Heinich 1993; and Moulin, Raymonde. "De l'artisan au professionnel: l'artiste", *Sociologie du Travail* 25, 1983, pp. 388-403.

³³. Wittkower, R. et Wittkower, M. *Born under Saturn: The Character and Conduct of Artists: A Documented History from Antiquity to the French Revolution*, New York : Random House, 1963.

³⁴. Moulin, 1983; and White, Harrison C. et Cynthia A. White. *Canvases and Careers: Institutional*

Thus in Western societies at least, artists failed to create a centralized self-administered institution with the power to certify and exclude candidates for membership (in the model of medical doctors for example).³⁵ As a result the occupational category of the artist does not fit standard definitions of institutionalized professions although there are still regulatory bodies which partially control access to artistic practice, notably prestigious galleries, museums, critics, art schools and funding organizations which provide artists with reward structures and credentials to establish their professional status.³⁶ Efforts to establish criteria for identifying "professional" artists have run up against serious obstacles since economic measures of the percentage of income from artistic activity fail to take into account the nature of the activity.³⁷ Very few people who create art are able to make a living from it and many do other things for a living for at least part of their working lives.³⁸

These observations about the historical transformation of the artists' position in society have certain specific applications in our study. First of all they point to difficulties in labelling who is an artist, which we will discuss throughout the text. In the second place, they indicate changes in the way artists learned about techniques and materials due to social structural transformations. In medieval craft traditions painters entered their trade through apprenticeships in painting studios. Painters theoretically

change in the French Painting World. New York: Wiley, 1965.

³⁵ Freidson, Eliot. "The Theory of Professions: State of the Art", in Dingwall, Robert and Philip Lewis, *The Sociology of the Professions: Lawyers, Doctors and Others*, London: Macmillan, 1983, pp. 19-37; Freidson, Eliot, "Les professions artistiques comme défi à l'analyse sociologique", *Revue française de sociologie* 27, 1986, pp. 431-444.

³⁶ Couture, Francine. "La professionnalisation de l'art" in Wallon, Emmanuel (editor) *L'artiste, le Prince. Pouvoirs publics et création*. Grenoble: Presses Universitaires de Grenoble, 1991, pp. 123-131. See also Balfe, Judith. "Art Patronage: Perennial Problems, Current Complications" in Balfe, J. (editor), *Paying the Piper. Causes and Consequences of Art Patronage*. Chicago: University of Illinois Press, 1993, pp. 306-323.

³⁷ Singly, François de, "Artistes en vue", *Revue française de sociologie* 27 (1986), pp. 531-544.

³⁸ On the centrality of economic uncertainty in the very definition of the artist see: Menger, Pierre-Michel. "Rationalité et Incertitude de la Vie d'Artiste", *L'Année Sociologique*, Volume 39, 1989, pp. 111-151.

learned to make their own paints and it is often assumed they had greater knowledge of art materials than present-day artists. While artists' paints were certainly made in the painter's studios by assistants and apprentices, it is not clear whether these helpers had equal access to becoming the master of a painting studio themselves (or whether they were essentially considered to be servants or practitioners of a different category of occupation). After the breakdown of the artisanal tradition of apprenticeships, art academies took over the technical education of the artist. Debates raged in the academies regarding the place of technical training in art education. By the 18th century artists in France and England had begun to rely on small entrepreneurial paintmakers known as "artist's colourmen". In the 19th and 20th century art materials manufacturing business emerged and some large firms were established. Thus at least superficially there appears to be an historical trend towards increasing social differentiation between paintmaking and artmaking as occupations. Simultaneously as well, the occupation of art restorer becomes more evident.

Over time, then, occupations emerged which handled manual tasks related to making art materials and preserving art. Whether social distinctions between people who undertook these activities were novel, or whether they reproduced pre-existing divisions of labour in studios is unclear. Questions arise as to what extent collaboration between people in these different occupational categories occurred and occurs now. Did paintmakers and conservators also undertake processes of "professionalization"? Were boundaries somehow created which isolated their practices from those of artists? One wonders also whether paintmakers and conservators are largely invisible in literature about art because of a lower status conferred on them by the manual associations of their jobs.

Innovation and Recognition of the Modern Artist

With the transformation of the image and status of the artist came changes in depictions of the function of art in the West. In the 19th and 20th century, theories of art increasingly stressed the artist/audience relationship.³⁹ According to some analyses, the burden of proof of artistic value passed from the art object to the artist.⁴⁰ Artistic value of the work of art became inseparable from recognition of the artist as a creator in modern art.⁴¹ Increasingly the challenge for artists was to achieve renown as an avant-garde leader and to establish a new model for others to follow.⁴² Technical innovation was a way for artists to attain recognition as members of an avant-garde. Therefore, even though artistic discourse overtly de-emphasized artisanal skills interest in new materials and techniques increased.⁴³

During the first few decades of the twentieth century, modern art became associated with various modes of innovation, notably the use of "new" materials, novel techniques and the rediscovery of old techniques.⁴⁴ It has been argued that "for Modernists the subject of art was often the process of art".⁴⁵ Despite the reluctance of

³⁹. Jauss, 1981; Jurt, 1980. Bonfait, Olivier, "Histoire de l'art et sciences sociales, 1976-1987," *Année Sociologique* 39, 1989, pp. 59-79; and Castelnovo, Enrico, "L'histoire sociale de l'art : un bilan provisoire," *Actes de la recherche en sciences sociales*, December 1976, pp. 63-75.

⁴⁰. Moulin, Raymonde, "La genèse de la rareté artistique", *Ethnologie française* 8, 1978, pp. 241-258 and Moulin, Raymonde, *L'Artiste, l'Institution et le Marché*, Paris: Flammarion, 1992.

⁴¹. We use the term modern here pointedly referring to standard art-historical periodization of art made in European-based aesthetic traditions which appeared in the mid-19th century (around the time of Manet) and subsequent stylistic movements through to about 1945. After this time the term contemporary art is sometimes used. For the purposes of our discussion we have retained use of the term "modern" for the various abstract and pop paintings created in the 1950s and 1960s by artists in the study since they place the work done in this period in the context of modernist aesthetics themselves.

⁴². Heinrich, Natalie, "Peut-on parler de carrières d'artiste? Un bref historique des formes de la réussite artistique", *Cahiers de recherche sociologique*, no. 16, 1991:43-54. For example, Marcel Duchamp's use of "ready-mades", like the mass-produced porcelain urinal which he signed with a pseudonym and exhibited in 1917 with the title *Fountain*.

⁴³. Heinrich, 1991a; Moulin 1983.

⁴⁴. Zolberg 1989, p. 191; Francastel, Pierre, *Art et Technique aux XIX^e et XX^e siècles*, Paris: Gallimard, 1956.

⁴⁵. Jencks, Charles, *What is Postmodernism?* London, 1986 (revised 1987).

artists to see their role defined solely in terms of technique, experimentation with materials and artmaking processes became a common, perhaps normative practice in the creation of art for museums and the international art market. One of the striking aspects of the key works which signal the transition from nineteenth-century painting to twentieth-century art was the use of materials not traditional for art which transformed the formal qualities of the objects all the while bringing into question the relations between art, artworks, the artist, technology and society. This type of technical experimentation opened the doors to a period of transformation in art forms without parallel in the known history of western art. Yet, whether this type of appropriation constitutes innovation in any profound sense is subject to debate.

Technical Innovation, Avant-Gardes and Social Patterns

The idea of innovation and the related notion of the avant-garde both imply a discontinuity with past practices and the establishment of new regularities.⁴⁶ In other words an innovation breaks with the past but leads to future trends. By highlighting changes it allows use to see patterns or structures in practices. Similarly an avant-garde may be seen as a structural phenomenon involving both regularities and singularities which are discernible in the juxtaposition of claims to a collective identity (expressed through the demand for "supraindividual" significance) and demands for recognition as a singular individual.⁴⁷ Avant-gardes may be seen as mechanisms through which social change occurs in particular socio-historic settings. Another way of looking at both avant-gardes and innovations is to consider them as observation points which allow us

⁴⁶ Strauss, Anselm (Lajarte, Isabelle and Menger, Pierre-Michel, trans.). "L'influence réciproque de la routine et de la non-routine dans l'action", in Menger and Passeron 1994. pp. 347-365.

⁴⁷ For a discussion of avant-gardes as both social and aesthetic phenomena see Leja, Michael. "The Formation of an Avant-Garde in New York", *Reframing Abstract Expressionism. Subjectivity and Painting in the 1940s*. New Haven: Yale, 1993, especially pp. 20-21; and Bürger, Peter (trans. Michael Shaw). *Theory of the Avant-Garde*. Minneapolis: University of Minnesota. 1984 (1974 original).

to see structures by making disruptions in them which foreshadow subsequent patterns.⁴⁸ It is in the latter sense that the terms are used in our study.

The idea of innovation needs clarification when talking about technical issues in the arts, because here two categories of innovations are involved. Innovations in paintmaking are considered in this study to be technological innovations which do not necessarily translate into changes in artistic practices or products even though paintmakers participate in art worlds (although they may). Both types are forms of cultural innovation but this does not imply that innovation happens in same way in both areas, since each area has its own set of internal processes and history. Indeed, Thomas Kuhn has proposed that innovation occurs differently in art than science and technology because artistic and scientific practices are fundamentally distinct, although for our purposes such assumptions are not required.⁴⁹ In this study technical innovations are taken to have both empirical and theoretical connotations, not just for developments in technology (or in art as the case may be) but in society.⁵⁰ People designated as technical innovators here will be people who have been depicted in accounts as having inaugurated new practices or theories affecting later trends.

⁴⁸. On the position of singularity in studying social interaction and in making structural generalizations see: Javeau, Claude. "Singularité et Sociologie", *Société*, no. 6. Autumn 1989, pp. 229-241; and Canguilhem, Georges. "Du Singulier et de la Singularité en Épistémologie Biologique". *Études d'histoire et de philosophie des sciences*. Paris: Vrin, 1968, pp. 211-225. On the function of disruptions for raising consciousness see: Thom, René. "La controverse". *Modèles mathématiques de la morphogénèse*. Paris: Christian Bourgois, 1980, pp. 111-125.

⁴⁹. According to him, artistic innovation involves finding a new problem to solve which is recognized as a valid problem in the arts, whereas in the sciences innovation occurs in problem solving and agreement must be reached on the adequacy of the solution. Kuhn, Thomas. "Comment on the Relations of Science and Art", *The Essential Tension: Selected Studies in Scientific Tradition and Change*. Chicago: University of Chicago, 1977, pp. 340-351.

⁵⁰. As well we consider inventions to be special extreme cases of innovation. The relative place of individual psychology and cultural determinisms in theories of both technological and artistic innovation depend on particular assumptions about the nature of human thought and action. McGee, David. "Making Up Mind: the Early Sociology of Invention", *Technology and Culture*. October 1995. Volume 36, Number 4, pp. 773-801.

Methodology and Sources

Theories about what we are observing lead inexorably to methods. By studying innovators we are endeavoring to locate reference points to understand transformations which will allow us to see patterns of relationships between people. These then are the central features of our methodology: to describe, understand and explain.⁵¹

To do this we have relied heavily on a specific type of life story known as an account of practices. This approach was developed in an ethno-social framework by French structuralists and also draws upon work by critical theorists in Quebec.⁵² The method helps us to unravel patterns of relations underlying the processes which eventually lead to the creation of artists' colours and paintings. Life stories are crucial for understanding the logic of these patterns, making it possible to study their dynamics through historical time. The voices of participants in art worlds inform us and help us understand the structures of interactions. This forces a consideration of the social-structural patterns, but also of the people who live them, maintain them and change them through time. Here then the representations and interpretations which constitute meanings are considered to be the result of processes in which subjectivity plays a part. The key to generalization in analysis is found in what Daniel Bertaux terms the "process of saturation" -- the recognition of patterns through a search for negative cases and interpretative thinking.⁵³

⁵¹. Granger uses these three verbs to characterize the process of qualitative methodology: "*décrire, comprendre, expliquer*". Granger, Gilles-Gaston. "Les trois modes de description des formes". *Pour la connaissance philosophique*. Paris: Odile Jacob, 1988, pp. 109-122.

⁵². Bertaux and Bertaux-Wiame (1985); Bertaux, D. and Kohli, Martin. "The Life Story Approach: A Continental View". *Annual Review of Sociology*. volume 10, pp. 215-237; Houle, Gilles. "Le bon sens des sociologues", *Sociologie du Sud-Est. Revue de Sciences Sociales. (Connaissance de l'Autrisme. Méthode, Méthodologies et Concepts)*. No. 59-62, January-December 1989, pp. 47-68; and Gagnon, Nicole and Jean, Bruno. "Les histoires de vie et la transformation du Québec contemporain", *Sound Heritage (The Canadian Aural/Oral History Conference, 1974)*, Volume IV, Number 1, 1974, pp. 56-63.

⁵³. Bertaux and Bertaux-Wiame (1981).

Information has been collected from a wide range of other sources too. We conducted topical interviews with key informants, in person and by telephone, and made observations during visits to artists' studios, paintmaking factories, art supply shops, and conservation studios. We attended meetings of associations and read everything that we could find related to the use of synthetic media in the arts in North America. The study also uses written sources heavily, in particular archival collections of personal papers, company records, government archives, trade literature, art magazines, artists' technical manuals and publications in art conservation. Detailed references are given throughout the text on sources in order to allow the reader to reconstruct the logic of the connections and to allow for further research. The following brief summary of the principle sources and information-gathering activities undertaken provides some technical details related to methods.

Published Sources

No single category of published documentation alone provides adequate information for the purposes of this project. Excluding trade literature and printed ephemera, the main publications containing information about synthetic paints for artists fall roughly into four categories: 1) texts for artists on art materials and techniques (such as manuals on techniques, and technical advice columns in art magazines); 2) specialized analyses written for paint chemists and conservation scientists (for example in publications of the American Institute for Conservation, and the Federation for Coatings Technology); 3) art historical or critical writing which includes accounts by artists, historians, critics and art conservators on individual and group practices in the arts (usually found in art journals, monographs or exhibition catalogues); and 4) publications in the history of technology and material sciences (such as institutional histories of the chemical industry).

Both historical documents of use as primary sources and more recent secondary

sources were used, although in different ways since the first gives access to past representations and the second to later interpretations. Of special interest were publications which were available to participants in the development of synthetic paint media and early users in the period between 1930 and about 1965. For example, we assembled a corpus of artists' manuals and technical articles in four major art magazines for this period which are analyzed in Chapter 6.⁵⁴ Many of the publications were extremely difficult to locate. Even exhibition catalogues, well-known artists' handbooks and major conservation journals were routinely unavailable through university libraries. Libraries in museums, large art galleries and conservation facilities are often the only places where such specialized titles on art materials and conservation can be found.⁵⁵ Many of these do not participate in interlibrary lending with university libraries and are not open to researchers without prior arrangements. Everywhere the collections tend to be very incomplete, in part because many institutions did not start acquiring work in these areas until after the beginning of the period under study, in part due to budgetary constraints or lack of interest in the subject.

Trade Literature

Another important source of information for this study was trade literature distributed by suppliers and manufacturers of industrial products and of art materials such as brochures and colour charts for distribution to dealers and artists. Also of

⁵⁴. The principal mass art magazines surveyed were: *The Magazine of Art*, *Art Digest*, *Art News* and *American Artist*.

⁵⁵. In Canada the following institutions had particularly useful collections in these areas : Canadian Conservation Institute (Ottawa), National Gallery of Canada (Ottawa), Canadian Heritage Conservation Laboratories (Dartmouth), and Queen's University (Kingston). In Washington, D.C. the following Smithsonian Institution collections are worth visiting: Museum Support Center Library, Conservation Analytical Laboratory Documentation Center, National Museum of American History Library and Archives, and National Museum of American Art and Portrait Gallery Library. Also in Washington the Library of Congress, the library of the Center for Advanced Studies in the Visual Arts and the Conservation Department Collection of the National Gallery of Art proved useful. In Germany the library of the *Forschungsinstitut* of the *Deutsches Museum von Meisterwerken der Naturwissenschaft und Technik* (Munich) had an excellent coverage of technical literature related to paintmaking.

interest were technical bulletins and magazines published by chemical companies for paintmakers.⁵⁶

This literature is avowedly centered on consumer-supplier relations, and as such gives access to changing representations of those relationships. Dating problems are frequent though, since businesses often fail to date publications (presumably in the hope of presenting them to clients as recent for several years). Again assembling a corpus of such documents is fraught with difficulty due to the scattered and incomplete nature of collections. Historic trade literature (like catalogues or price lists) is difficult to obtain even from companies still in business where the focus is on products currently available.⁵⁷ Old colour charts and publicity pamphlets were routinely discarded when the "lines changed". Sometimes trade literature pertaining to larger companies can be found in libraries, but publications by art materials manufacturers are rare finds.⁵⁸ Some trade literature about art supplies and related materials was located in collections of personal papers by people involved with art techniques, such as paintmakers, conservators and writers of art handbooks.⁵⁹

Business Records, Institutional Archives and State Archives

The record keeping habits of many of the early innovators appear to have been haphazard. Furthermore, organizational changes associated with transfers of ownership

⁵⁶. Such as *Resin Review* and the *Rohm and Haas Reporter* which were sent to artists' paintmakers who were clients by the Rohm and Haas Chemical Company.

⁵⁷. Although happy to provide recent information when approached they were generally unable to find older publications. The Zora Pinney Papers at the Conservation Department of the National Gallery of Art (Washington) was an important source of art materials trade literature for this study even though most of the publications in it are relatively recent.

⁵⁸. For example, the National Museum of American History, Smithsonian Institution, Washington, D.C. has selected documents of interest from the Rohm and Haas Chemical Company, Du Pont and Union Carbide.

⁵⁹. Specific cases are mentioned throughout the text but the papers of paintmaker Len Bocour and artists' handbook author Ralph Mayer are particularly useful in this regard. Ralph and Bena Frank Mayer Papers, AAA; Ralph Mayer Papers, Yale University; Leonard Bocour Papers, AAA.

have tended to obliterate these repositories of collective memories.⁶⁰ As far as papers available from companies still in existence, although many paintmakers are able to supply a brief (one or two paragraph) summary of company history on request, details are often lost in the day-to-day activities of business. Business records and information about formulas are usually considered company secrets, and many documents of historical or sociological interest (for example concerning client orders) appear to have been discarded or lost when businesses changed hands.

Large chemical companies maintain their own corporate archives which are sometimes open to scholars by arrangement and usually contain good general collections of trade literature.⁶¹ However, other sorts of documentation on specific products is frequently incomplete, missing or confidential. Consider for example, our attempts to search for information about individual purchases by artists of selected key components in artists' paint between 1930 and 1960. The products in question were produced by many different departments in several companies over the years. The departments were merged with other units, sold off, or dispersed within the complex organizational structure. Even in cases when the relevant department was identified through research in artists' papers no information about small business matters (like purchases from individual artists) could be located through company records despite considerable effort. Presumably documentation about such small transactions has been discarded.

Archives of art institutions were useful when specific information was sought. They could not serve to generate quantitative data about the incidence or prevalence of the use of synthetic media in paintings in their collections because most art galleries and

⁶⁰. Records located are covered in appropriate sections. See especially Chapters 4, 5, 6 and 7.

⁶¹. For example, the Archives and Offprints divisions of the Hagley Museum and Library run by the Du Pont de Nemours chemical company in Wilmington Delaware provided an hospitable welcome for research on the early pyroxylin lacquers sold under the trade name Duco which were popular with artists.

museums do not have data bases with detailed enough descriptions of the materials used in all their artworks for the needs of our study. This situation is changing. Efforts at computerization of collections and creation of more comprehensive conservation databases with information about art materials are underway but still in formative stages.⁶²

Government archives were also used, particularly in conjunction with research on the New Deal projects. The lamentable practice by the U.S. National Archives of retaining a general record of arts administration policy but discarding technical information led to many disappointments as we will discuss.

Personal Papers of Artists, Conservators and Paintmakers

Personal papers of artists, conservators and paintmakers provided the richest sources of written information. Letters, newsclippings, old appointment books, visitors' books from art exhibitions and all manner of printed ephemera (such as posters for talks or souvenir banquet programmes) yielded information about relationships and substantive concerns. The biggest single repository of material for this study was found at the Archives of American Art which is part of the Smithsonian Institution in Washington, D.C..⁶³ Other important locations for pertinent archives are identified throughout the text. Archives were consulted in the U.S., Canada, Mexico and Germany.

In-Depth Life Story Interviews and Topical Interviews with Key Informants

Written sources alone were inadequate for this study. Conversations and

⁶². For example in Canada the Conservation Information Network has a computerized database on materials, but it was quite limited in its scope when the research for this study was being conducted.

⁶³. Some of the material is microfilmed and can be borrowed through Interlibrary Loan, but some requires a special appointment for viewing. Most of the unmicrofilmed material is in Washington but sometime materials are housed in one of the regional offices and care should be taken to confirm the location ahead of time.

interviews done for this study occupy a central place in our analysis. Hundreds of people were consulted during the course of the research: artists, paintmakers, conservators, curators, art supply dealers, research chemists and artists' handbook authors. Families, employees and former co-workers of prominent figures in the history of the development of synthetic painting media for artists were also consulted where possible. All of the major art materials manufacturers were contacted by telephone or in writing in efforts to locate key informants (often many times) as were chemical supply companies. Inquiries were made by telephone at former workplaces of conservators and at schools of art conservation.⁶⁴ Representatives of voluntary associations concerned with art materials were contacted and art departments and art galleries with possible connections to key people were canvassed for suggestions about how to locate them.

In addition to these sorts of conversations, three basic types of interviews were conducted: interviews with key informants who knew people involved with the history of synthetic media, interviews with key informants about practices (in their field), and life story interviews with artists and paintmakers. Not all of the interviewees are named or quoted in the following text. The reasons for this varies. For example in the cases of several employees of larger companies undergoing management changes, direct quotes might jeopardize the careers of respondents.

Interviews based on the life story approach have proven particularly useful because the autobiographical narrative provides an anchor for comparison and analysis. Here the focus was on manufacturers of synthetic artists paints and on highly visible artists who were early users of acrylic paints made especially for artists in the 1950s and early 1960s. In the case of art materials manufacturers, since only two of the pioneers

⁶⁴. This resulted in unexpected discoveries of written documentation as well, for example the archives of curator Rutherford J. Gettens at the Conservation Department of the Freer Gallery of Art in Washington.

in synthetic paintmaking for artists colours were still alive at the beginning of the project, other paintmakers were also interviewed.⁶⁵ As for the choice of artists, a list of names of influential artists who used products was generated by asking paintmakers, examining past interviews, trade literature and published material about the new paints. The artists must have tried acrylics during the period in which the new paints were being developed and introduced on the market (that is by the early 1960s). Practical constraints made it impossible to interview all of the artists named. Many had passed away before the research began. Two artists died after being contacted but before being interviewed (Paul Jensen and Sam Francis). One artist refused to be interviewed (Robert Rauschenberg); three artists did not reply (Frank Stella, Philip Pearlstein and Alex Katz). One artist agreed in principle to the interview but scheduling problems intervened (Helen Frankenthaler).

For both paintmakers and artists, the interviews were structured around their individual "life histories", focussing on accounts of practices. In both cases the focus was on the transmission and appropriation of technical information. Paintmakers were first encouraged to give a chronological account of their paintmaking practices (such how they learned to do it, how they got ideas for innovations and how they continued to acquire technical information). They were asked to talk about their relations with artists, other paintmakers and with chemical companies, and to give their opinions about trends in tastes for artists' paints. Finally, general comments about the place of paintmaking and innovations in art materials with respect to art were solicited.

Artists were asked to give chronological accounts of their studio practices, tracing their use of various media from their earliest recollections in childhood to the present. They were asked how they had learned about techniques and materials and invited to comment on their relationships with teachers, colleagues, paintmakers and

⁶⁵. Chapter 7 explains in detail how the list of paintmakers was generated.

suppliers of materials. A second level of questions dealt with the relationship between materials, techniques and their art.

Each account took a different form, depending on the particular itinerary and views. In the case of the artists, since they are all well-known figures they were all experienced interviewees with certain set notions about their own presentation of self and way of talking about their work. In most cases they repeated ideas that they had expressed before to give a picture of their history, sometimes referring to past interviews or publications. Therefore written sources have been used to complete the pictures sketched during the interviews conducted for this project.

Existing Oral History Records

Many of the participants in the initial development of synthetic artists' colours are now deceased or very elderly. Therefore earlier interviews conducted by others have provided valuable insights, in particular those done with now-deceased key figures under the auspices of the Oral History Program of the Archives of American Art.⁶⁶ The program was started in 1958 with a series of taped interviews of artists who had been active at the beginning of the twentieth century. In 1963 the Archives undertook its first large-scale project -- over 300 interviews with artists and administrators who had been involved with New Deal art programs in the 1930s. Archives Offices (in Boston, New York, Detroit, Washington, Houston and San Francisco) have produced over 2,500 interviews with artists, critics, dealers, curators, museum collectors and others associated with the history of the visual arts in the U.S.. They also collect tapes and transcripts from individual researchers or as part of personal papers. Other oral documents in the collection include recorded symposia, lectures and panel discussions.

⁶⁶. Anonymous. *The Card Catalog of the Oral History Collections of the Archives of American Art*. Wilmington: Scholarly Resources, 1984.

To some extent, gaining access to these materials was like joining a large on-going data collection team. However, some caution was necessary in analysis : the interviews were not done at the same time; the conditions and themes of the discussion differ; the interviewers vary and so on. Yet, as will become apparent in the text, these variations have constituted an unexpected bonus since in several cases interviews done of the same individual at different times allow us to follow interpretations of events over a period of time.

Visits to Artists' Studios, Paintmaking Factories, Conservation Studios, Laboratories and Art Supply Shops

Visits were made to artists' studios, paintmaking factories, conservation studios, laboratories and art supply shops to try to find out more. Watching conservators do restoration and looking at their laboratory research raised questions about the nature of their work which inform us throughout our analysis. Observations at paintmaking companies made links with artists apparent, for example by overhearing phone calls while looking at art acquired through trades for paint. Art supply dealers gave help in locating art materials manufacturers and had considerable knowledge about taste trends in painting materials over the years. Visits to artists' studios prompted more questions about studio practices. As well, other types of direct contacts brought more new insights and questions, in particular at various gatherings, such as conferences in art conservation, or meetings of paintmakers and conservators.⁶⁷

⁶⁷. Among the meetings attended were the following: Modern Materials Meeting, Department of Conservation, National Gallery of Art, Washington, D.C., February 1994; *Symposium '91: Saving the Twentieth Century: The Conservation of Modern Materials*, (Canadian Conservation Institute and Communications Canada, Ottawa, September 15-20, 1991), sessions on "Art History and Art Conservation" and "The Kingston Conference" (Universities Art Association of Canada, 1991, November 7-10, 1991); and the Gerry Hedley Memorial Forum: "Why Study Technique-- Know Your Painting" (Queen's University, Kingston, Ontario, April 23-25, 1992).

Overview of the Sources

Although the following text makes copious references to written documentation, these are offered as routes for further research and would have been inadequate in themselves. The spotty nature of collections of written documentation makes it impossible to rely solely on such records. Furthermore, the documents themselves tend to emphasize disciplinary boundaries rather than relations across them due to institutional factors governing their publication, collection and preservation. On the other hand, oral testimony underlines the rich interplay of cultural practices in the appropriation of technical knowledge for the creation of individual and group identities. Direct contact with people involved with art materials and art-technical issues provided crucial elements for understanding how different sorts of knowledge combine in their discourse, in their creative practices and in their relations with each other.

CHAPTER 2 – Modern Paint and Socialist Ideals: Mexican Muralists and Technical Innovation during the Interwar Period

The earliest prominent, well-documented use of synthetic media in painting was by the Mexican muralist, socialist and self-described "new realist" David Alfaro Siqueiros (1896-1974) in the 1930s.¹ This is of particular interest for the study of the political and aesthetic associations of the new media, since many American painters who later became known for their use of synthetic paints (like Morris Louis and Jackson Pollock) were quintessential "outsiders", artist-visionaries and abstractionists who in their socially-isolated mature periods became associated with an avant-garde elite of critically-acclaimed leaders in the high culture model.²

By contrast, Siqueiros was an outspoken revolutionary partisan of the people who was often jailed or put under house arrest for his incendiary anti-authoritarian, anti-fascist activities. He did some abstract paintings in his later years but most of his painting during the 1930s (with the notable exception of portraits) was representational work depicting socialist themes of oppression, resistance and class struggle (see Figure 9). Although Siqueiros managed to maintain a lifestyle which was relatively prosperous given the precarious state of the economy during his time, throughout his life, even in old age, he repeatedly jeopardized his own comfort and security to speak out against oppression. He was one of the most highly politicized artists of the century. He

¹. Other artists began to experiment with the new industrial and commercial paints at about the same time but Siqueiros stands out because of his enthusiastic proselytizing for new materials and because he specifically linked his adoption of the new materials to aesthetic and ideological dimensions of his artistic practice. Although Siqueiros' expressionistic work did not conform to Stalinist interpretations of social realism, he himself saw his art as an authentic expression of socialist commitments. He "used the term *nuevo realismo* ("new realism") later changed to *neorealismo* (1951) which marked a new phase of his social realism." Tibol, Raquel. *David Alfaro Siqueiros*, Mexico City: Empresas Editoriales, 1969; and Goldman, Shifra M. (foreword by Raquel Tibol), *Contemporary Mexican Painting in a Time of Change*. Albuquerque: University of New Mexico Press, 1995 reprint of 1977 original, p. 102

². As we shall discuss later both Louis and Pollock had participated in Siqueiros' New York Experimental Workshop in 1936 where Siqueiros' innovative use of the new nitrocellulose (pyroxylin) lacquers such as Duco was legendary.

analyzed, criticized, interpreted and (inevitably, it seems to readers of his work) justified the social, political and aesthetic implications of his own artistic practice in great detail. His well-documented self-examination is exceptional in its subtlety and comprehensiveness though highly dogmatic :

"[Siqueiros] belongs to that very small company of artists whose power resides in personally living out an ideological myth. He is the 20th-century epitome of the artist as political propagandist and activist. His art is pure visual rhetoric, intended neither to please nor to inspire but to persuade. . ."³

Yet Siqueiros can also be seen as the embodiment of the provocative, charismatic twentieth-century model many scholars have discerned in leaders in the artistic field.⁴ In this sense, Siqueiros' discourse about his artistic practice may be considered somewhat emblematic of modernist left-wing artistic discourse during the 1930s, although it expressed his own particular blend of politics and art.⁵ Much of the documentation on his views remains available only in limited-edition Spanish-language documents which have not been widely distributed; therefore Siqueiros' accounts of his discovery and reception of the new synthetic media merit detailed consideration here.⁶

³. O'Connor, Francis V. "The Influence of Diego Rivera on the Art of the United States during the 1930s and After", in Helms, Cynthia (ed.) *Diego Rivera. A retrospective*. Detroit Institute of Arts: Detroit, 1986, p. 159.

⁴. On the topic of the paradoxical nature of the avant-garde artist balancing the impulsion for individual recognition and the need to be placed within a collectivity to establish relevance and authority see: Leja, Michael, "Theories of the Avant-Garde", *Reframing Abstract Expressionism. Subjectivity and Painting in the 1940s*. New Haven: Yale University Press, 1993, pp. 20-24; Heinrich, Nathalie. "Peut-on parler de carrières d'artiste?", *Cahiers de Recherche Sociologique*, 1991. Numéro 16, pp. 43-54; and Couture, Francine. "La professionnalisation de l'art", in Wallon, Emmanuel. *L'artiste, le prince*. Grenoble: Presses Universitaire de Grenoble, pp. 123-131.

⁵. For a discussion of the period in which left-wing discourse peaked and declined in U.S. art circles see Guilbaut, Serge. (trans. Arthur Goldhammer) "New York, 1935-1941: The De-Marxization of the Intelligentsia", *How New York Stole the Idea of Modern Art. Abstract Expressionism, Freedom, and the Cold War*, University of Chicago Press, Chicago, 1983, pp. 17-48.

⁶. The archives of Siqueiros' papers are located in part of his former Mexico City home which is now a museum called the *Sala del arte público Siqueiros*. Important publications treating his discovery and use of the new materials include: Siqueiros, David Alfaro. *Me llamaban el Coronelazo (Memorias)*, Mexico: Grijalbo, 1977; Siqueiros, David Alfaro. *Como se pinta un mural*, Cuernavaca: Ediciones Taller Siqueiros, 1979 (1st edition 1951); Siqueiros, David Alfaro. *Mi respuesta.*, Mexico: Arte Público, 1960. Siqueiros, David Alfaro. *No hay mas ruta que la nuestra*. Mexico: no publisher, 1978 (2nd edition). See also: Tibol, Raquel. *David Alfaro Siqueiros; un mexicano y su obra*. Mexico: Empresas Editoriales, 1969; Tibol, Raquel. *Siqueiros: introductor de realidades*, Mexico. UNAM.

Siqueiros and his followers linked technical innovation to their vision of the emancipatory function of art.⁷ These painters endeavored to apply socialist ideals to their studio practices, notably with the appropriation of tools and materials used by workers in factories to create new art for the masses, art which belonged to the workers, the peasants and the dispossessed.⁸ Their early discourse about the new media portrays the use of these new materials as a socially-conscious, political and aesthetic act to promote revolutionary change.

Siqueiros claimed to have developed a new perspective on painting during stays in the United States (notably in California and then in New York) through contact with modern materials and tools (like the air gun) which revolutionized his artistic practice and that of his many students and followers.

In this section we will consider Siqueiros' accounts of his discovery of the new painting media, his agonizing difficulties at reconciling the use of modern materials with artistic traditions and his stories about contacts with paint chemists and with what he termed a "typical Yankee bureaucrat" in the chemical industry.⁹ In order to understand the subsequent impact of this experimentation and the meanings which the new paints had for artists who worked in this vein, it is necessary first to look at the context of the Mexican presence in North American artistic and ideological circles during the interwar years.

1961; Instituto Nacional de Bellas Artes(INBA): *Siqueiros: el lugar de la utopia*, Mexico: INBA and Sala de arte público Siqueiros, 1994.

7. Siqueiros, (1951)1979 and 1977.

8. Siqueiros worked "directly" with his materials, without preliminary sketches, and encouraged his students (called "comrades") to experiment. They threw paint across the room, applied it with spray guns like real factory workers. They burnt paint and let it drip, adding sand and anything they could find to give it texture. Naifeh, Steven and White Smith, Gregory. "An Antidote to Regionalism", *Jackson Pollock : An American Saga*, New York : Harper , 1991, p.286.

9. He called the general manager of a Du Pont company factory which he visited "típico alto funcionario industrial yanqui". Siqueiros, 1979, p. 314.

The Mexican Renaissance, the Political Role of the Artist and Interest in New Art Techniques

During the 1920s and 1930s Mexican painters attained an exceptional status in Canada and the United States.¹⁰ They were the first prominent group of living artists born on this side of the Atlantic to be treated as full-fledged members of the international art world and as leaders of a modern avant-garde movement. The sense of inferiority felt by participants in U.S. and Canadian artistic circles at that time was particularly apparent in the reception of painters working in modernist modes: foreign painters were given shows at prestigious galleries, American (and Canadian) modernists were treated as imitators "by definition".¹¹ Yet as early as 1916, work by the Mexican painter Diego Rivera was being shown in New York with French cubists.¹²

Mexican art provided an influential, highly controversial and exuberant alternative to the habit of following European trend-setters, although many of the most prominent Mexican artists spent time in Europe:

"Unlike marginal modernists of the 1920s, such as Edward Hopper, John Marin, Alfred Mauer, Charles Sheeler, and Max Weber, who were still trying to figure out what happened at the Armory show so they could imitate it, the Mexicans were busy misreading the School of Paris, the Italian Renaissance, and their own indigenous culture within the ideological context of Marxism. That the

¹⁰ This interest was manifested in a large travelling exhibition called *Mexican Art Today* which was organized in 1943 by the Philadelphia Art Museum and shown in Baltimore, Montreal, Toronto, Ottawa and Philadelphia. The show included over two hundred paintings, prints and drawings by dozens of Mexican artists (56 oils, 43 watercolours and drawings and 138 prints). In Canada the show carried distinct ideological overtones. In Montreal it was shown at the Art Association of Montreal under the auspices of the Canadian Inter-American Association. The National Gallery of Canada and the Wartime Information Board sponsored the Ottawa show which was arranged after a cancellation in Boston. Apparently the militant, anti-fascist, populist messages evidenced in many of the titles of works in the show fit the ideological programme of the Canadian Government at the time. H.O. McCurry, then director of the National Gallery of Canada wrote in a letter to A.S. Grigsby, curator of the Vancouver Art Gallery that "We didn't feel that we could afford it but the Wartime Information Board, for reasons which would be obvious to you, was anxious that it be held." MBAC Archives, 5-5M "Exhibitions in Gallery, Mexican Art Today Exhibition, files 1 and 2.

¹¹ For a discussion of the slow acceptance of American modernists see Rose, Barbara, *American Art since 1900: A Critical History*. New York: Praeger, 1972.

¹² Exhibition at the Modern Gallery, *Paintings by Cézanne, Van Gogh, Picasso, Picabia, Braque and Rivera*, New York, February 12-March 4, 1916.

Mexicans were influential in the United States during the 1930s is not surprising; they filled a cultural and ideological vacuum."¹³

Socially Concerned Mexican Art in the U.S. and Canada

During this period in the U.S. a transformation was occurring as artistic discourse increasingly embraced a search for an authentically "American" style of painting. The origins of this nationalistic quest are many. Isolationist tendencies after World War I, anti-communist "Red" scares, tightened immigration laws and the execution of the "foreign subversives" like Sacco and Vanzetti in 1927 were representative of powerful forces in U.S. society at the time which had repercussions for art patronage. These repressive trends together with concerns about the moral impact of industrialization and urbanization, led to support for "nostalgic depictions of rural scenes" favored by American Scene painters and Regionalists.¹⁴ At about this time, socialist and communitarian movements began to promote the use of art as a tool for social commentary and protest.

Mexican artists provided inspirational leadership for American (and somewhat later Canadian) artists.¹⁵ They were highly politicized participants in revolutionary activities in their country and had developed an avant-garde art that was nationalistic

¹³ O'Connor, Francis V. "The Influence of Diego Rivera on the Art of the United States During the 1930s and after" in *Diego Rivera*. W.W. Norton, New York, 1986, p. 159.

¹⁴ Cockcroft, Eva. "The United States and socially concerned Latin American art: 1920-1970" in *The Latin American Spirit: Art and Artists in the United States, 1920-1970*. New York: Abrams, 1988, p. 189.

¹⁵ According to Boyanoski interest in Mexico and Mexican art came via the American press coverage of the muralists in the 1930s. Canadian artists began going to Mexico in the late 1930s and in the 1940s. Three of the best known Canadians to have been influenced by Mexican muralists were Arnold Belkin (who studied under Siqueiros), Fred Ross (who was influenced by Rivera) and Stanley Cosgrove (who worked as an assistant to Orozco). Christine Boyanoski, "The Challenge of Social Responsibility and the Example of Mexican Art", a talk given at the Universities Art Association of Canada 1991 Annual Meeting, November 7-10, Kingston, Ontario. For a discussion of other Canadian artists influenced by Mexican artists see the exhibition catalogue: Christine Boyanoski, *The Artists' Mecca: Canadian Art and Mexico*, Toronto: Art Gallery of Ontario, 1992. For coverage of the Mexican experiences of Stanley Cosgrove and Arnold Belkin see: Cosgrove, Stanley and Robert Ayre. "Conversation about Orozco", *Canadian Art*, Vol. VII, Number 2, 1949, pp. 60-65. Anonymous, "Young Canadian Muralist Recognized in Mexico", *Canadian Art*, Vol. X, Number 2, 1953, p. 84.

and modern, yet intensely aware of Native American contributions and rights. They frequently sojourned north of the border where they taught studio courses, gave demonstrations of new techniques, took on apprentices and executed commissions. During the period between 1927 and 1934 the anti-communist Calles presidency in Mexico forced many Mexican artists into exile, among them the three muralists who later became known as *los tres grandes* (the three great ones) : Diego Maria Rivera (1886-1957), José Clemente Orozco (1883-1949), and David Alfaro Siqueiros.

One way then that the Mexicans filled the cultural and ideological gap confronting many American and Canadian artists in the interwar period was by flamboyantly proclaiming a fierce nationalism and managing to conduct successful international careers on their own terms. These Mexican artists used complex ideological arguments to insist on the value of their art as part of an international creative process of personal and collective emancipation, a process which was both political and aesthetic in nature. The muralist movement addressed some of the central concerns of North American intellectuals in the 1930s with its emphasis on a public art of social commitment bringing artists into meaningful contact with society at large.

The Mexican Renaissance and Mural Painting as a Political Act

Los tres grandes were the most prominent of many artists who had been associated with the Mexican Renaissance in art during the administration of President Alvaro Obregón in the 1920s. After decades of violent struggle the country had finally entered a period of hope and optimism and the muralists became leaders of the cultural vanguard in revolutionary Mexico, producing socially conscious art for different kinds of sites throughout Mexico ranging from colonial churches, palaces, government buildings, schools, town halls, and museums. They flooded the walls with torrents of images, in a variety of modes "presenting the many faces of Mexican society, its

aspirations and conflicts, history and culture".¹⁶

The dominance of the visual arts and the primacy of muralism in the cultural field has been attributed to the confluence of several factors.¹⁷ There was a philosophical basis and of course government funding. Obregón's Minister of Education José Vasconcelos was a philosopher inspired by Pythagorean concepts and Comte's positivism. He believed that society had evolved through stages, the most advanced of which was the aesthetic stage, which revolutionary Mexico was about to enter. He held that in Mexico the visual sense dominated (rather than the musical or the literary), and believed passionately that Mexicans could only be totally won over to the revolutionary cause "if their aesthetic sensibilities had been aroused".¹⁸ In his view the visual arts were essential for the social well-being of society. Vasconcelos had instituted a vast programme of public art (favoring wall-paintings) and rural art education in open air schools. The murals involved many different jobs which could be coordinated (such as elaborate wall preparations, laying down the 'cartoon' (or drawing), mixing and applying the colours) allowing many artists and artisans to be part of a collective creative process. His approach was unusual for public art projects in that the painters were free to choose their subjects, and means of expression. He thus enabled muralists to take the lead in the cultural field. Although Vasconcelos resigned in 1924, and many strictures were introduced, succeeding governments mostly continued to support public art, in particular wallpainting. In the analysis of Octavio Paz:

"Although they did not share his ideas, his successors perceived the political usefulness of them: the young revolutionary state had need of a sort of

¹⁶ For a brief introductory survey see Ades, Dawn. "The Mexican Mural Movement", in Ades, Dawn (ed.) *Art in Latin America. The Modern Era, 1820-1980*. New Haven: Yale, 1989, pp 151-180, quote from p. 151. See also a special issue on the movement in *Cuadernos del Taller de Grafica Monumental "Movimiento Muralista Mexicano"*, Mexico: Universidad Autónoma Metropolitana Unidad Xochimilco, 1986. An often-quoted source of biographical material in English is: Reed, Alma. *The Mexican Muralists*. New York: Crown Publishers, 1960.

¹⁷ See Ades, pp. 151-153.

¹⁸ Hennessey cited in Ades (1986) p. 152.

legitimization or cultural consecration, and what better consecration than mural painting?"¹⁹

Recent re-readings of the impact of the muralist movement claim it has been fetishized and point to the ultimate contradiction between the purportedly revolutionary goals of these self-described modernists producing artworks which were "commissioned, sponsored and paid for by a government that had never been Marxist and that had ceased to be revolutionary."²⁰ The muralist movement waned in the 1950s and easel painting regained some of its lost allure as the thousands of artists trained in the first part of the century sought creative outlets.²¹

There was a long tradition of mural projects in Mexico dating back to pre-Columbian times and the mural projects offered an opportunity to work on ways of resolving conflicts between pre-Hispanic and European artistic tastes and practices. The first phase of the mural project received the enthusiastic participation of many cultural leaders, among them Dr. Atl (Gerardo Murillo Cornadó, 1875-1964)-- painter, teacher, author and creator of "atl-color", a crayon which could be used on canvas, paper or even rock. Dr. Atl was sure that this crayon would revolutionize painting.²² Dr. Atl was mentor to many Mexican artists, and particularly influential in the early development of Orozco and Siqueiros. He had attacked the academicism of the principal art school (San Carlos) and, along with the well-known teacher Alfredo Ramos

¹⁹ Paz, Octavio (trans. Helen Lane) "Re/visions: Mural Painting". *Essays on Mexican Art*, New York: Harcourt Brace & Co., 1993, p. 133.

²⁰ Paz 1993, p. 132.

²¹ According to Goldman "when one considers the fact that only 289 artists were involved in the creation of 1,286 murals between the years 1905 and 1969, it becomes apparent that commissions have not been diffused among the growing artistic community, which was estimated at 12,000 in Mexico City alone by 1973." Goldman 1995, p. 15.

²² "Atl color" is mentioned on the back cover of a recent collection of works by Dr. Atl Dr. Atl, *Cuentos Bárbaros y de Todos Colores*, (edited by Jaime Erasto Cortés), Tercera Lecturas 7, Serie Mexicanas. Consejo Nacional para la Cultura y las Artes, 1990. However it was Tomás Zurian Ugarte, a conservator and the author of a work on Dr. Atl's infamous companion (Nabi Olin), who explained that they were an impermanent student-grade crayon. Interview with Dolores (Lolita) R. Fernández and Tomás Zurian Ugarte by Jan Marontate, Mexico City, June 15, 1994.

Martínez, supported militant art students in a 1911 strike. (One of the many young students of Martínez was José Gutiérrez, who later became a pioneer in the development of synthetic paints for artists.) Dr. Atl encouraged artists to work with architects and artisans to produce a socially accessible art in public places. He called for a movement away from easel painting and toward monumental wall painting which took into account the powerful sources of Mexican traditions decades before the inauguration of the government-sponsored mural projects.²³

Mural painting was by nature conducive to collective activity thus inherently appealing from a socialist point of view. However, applying Marxist models of society to the Mexican context was difficult, in part due to the conflicts between a largely impoverished grouping of native peoples and a dominant Hispanic majority. There was for example no clear-cut way to easily define the working class, since not all poor people were natives and not all natives were poor. In 1922, the "Declaration of Social, Political and Aesthetic Principles" drafted by Siqueiros and signed by all the members of the Syndicate of Technical Workers, Painters and Sculptors gave strong support to the native aesthetic, proposing a "fighting educative art for the people".²⁴ Yet, disputes raged amongst artists about whether to promote a native popular art (conforming to debatable ideas about what constituted indigenous aesthetics) or a "people's art" (which fused European and indigenous sensibilities). The disagreements about these distinctions were never fully resolved and had an impact on discourse about choice of painting materials.

²³. Siqueiros, "Atl, the Political and Theoretical Precursor" in Siqueiros, David Alfaro (trans. Sylvia Calles). *Art and Revolution*. London: Lawrence and Wishart, 1975, pp. 68-72. This is a translation from an article in Siqueiros, D.A. "Atl, el precursor formal profesional" *No hay mas ruta que la nuestra. Importancia nacional e internacional de la pintura mexicana modern. El primer brote de reforma profunda en las artes plasticas del mundo contemporaneo*. Mexico, private edition (2nd edition), 1975, pp. 29-44.

²⁴. This was reprinted in a collection of English writings. "A Declaration of Social, Political and Aesthetic Principales", in Siqueiros, David Alfaro (trans. Sylvia Calles). *Art and Revolution*. London: Lawrence and Wishart, 1975, pp. 24-25.

A seldom-mentioned factor which may have played a part in the hearty enthusiasm for wall painting of many Mexican artists may be in that it offered an opportunity for artists to engage in formalist concerns dealing with scale that had begun to emerge in European avant-garde circles. Several of the Mexican muralists (notably Rivera and Siqueiros) had spent time in Europe where modern artists associated with the cubist tradition like Fernand Léger had begun to paint on a larger scale.

New Readings of "Traditional" Techniques and Practices: Indigenism and Rivalism as Motifs Rather than Methods

In the 1920s and 1930s intense ideological debates covered all aspects of art-making in Mexico, including choice of materials and techniques. At first, the muralists stressed rediscovery and re-interpretation of old techniques, adapting indigenous practices and adopting traditional Italian fresco techniques. Some delved assiduously into historical treatises such as Cennino Cennini's and Leonardo's works on fresco.²⁵

Commentators on the movement have noted however that:

"For practical purposes, though, any 'tradition' really existed only in theory, and the young painters' claims to be starting from scratch were not just rhetorical. Their training had made no provision for mural painting, and their stories of how they set out to teach themselves often reach levels of high comedy. There was an early battle between the followers of encaustic . . . and true fresco, with the latter finally triumphant."²⁶

The Precolumbian mural tradition also provided an important source of inspiration. Political interests fueled a new interest in indigenous culture which had led to much archeological excavation and the discovery of historic mural cycles. Rivera and Siqueiros had accompanied several archaeological expeditions to sites around Mexico City, in the isthmus of Tehuantepec and the Yucatan in 1921, just when work was

²⁵. Schmeckebeier, Laurence E. *Modern Mexican Art*, Westport, Connecticut: Greenwood Press, 1971 reprint of 1939 original, pp. 40-41.

²⁶. Ades, p. 152.

beginning on the first major mural project since the colonial period.²⁷

Mexican "indianism" or "indigenism" was essentially a "form of anti-rationalism and anti-intellectualism" superficially not unlike the vogue for "primitive" cultures in Europe. However,

"there was a basic difference between European artists who turned to the "primitivism" of peoples outside their psychological and physical space and Latin Americans who return to a culture infused with Indian essence."²⁸

During the two decades between 1920 and 1940, there was a flowering of nativist, nationalist culture and history in Mexican art circles which involved sporadic efforts to rediscover and revive indigenous painting techniques.²⁹ In Siqueiros' words

"At the outset, the muralists met with a multiplicity of technical problems. It was necessary to search for teachers among our indigenous craftsmen and have them teach us their techniques of painting. We found them in the vicinity of Cholula. They taught us their methods, so pompously called *fresco* since the beginning of Christian art. So, with the help of these simple artisans, using a methods dating back to the pre-Hispanic era, we were able to create our first murals."³⁰

Indeed, some well-known Mexican artists attempted to glean "studio secrets" from native people working in the decorative arts or as artisans. For example, in the famous series of murals done for the National Preparatory School in Mexico City in 1922

"Ramón Alva [de la Canal] went to the native mason and craftsman. It had long been the custom of the Mexicans to paint the walls of their adobe houses; this was done simply with ordinary earth colors mixed with water and painted directly into the wet plaster. . . One of these masons was working as Alva's helper, and it was from him that the artist learned the method. Afterwards this

²⁷ This was at the National Preparatory School in Mexico City and involved many muralists, among them Rivera, Siqueiros, Fernando Leal, Jean Charlot and Fermín Revueltas. It was begun just after Rivera had returned from Europe. Pearce, Lucy. "Diego Rivera's Use of a Wax Medium in the 1920s", *W.A.A.C Newsletter*, Volume 16, Number 1, January 1994, pp. 17-20. Other accounts of techniques of Rivera, Siqueiros, Orozco and other prominent muralists drawing on exhibition catalogues and Mexican art journals appear with recipes in Suarez, Orlando S. "Capítulo III: Técnicas empleadas en el muralismo Mexicano," *Inventario del Muralismo Mexicano*, Mexico: Universidad Nacional Autónoma de México, 1972, pp. 331-354.

²⁸ Goldman 1995 (1977), p. 7

²⁹ See for example, Goldman, 1995, p.9.

³⁰ Siqueiros, David Alfaro. "Preface", in Gutiérrez, José and Nicholas Roukes. *Painting with Acrylics*. New York: Watson-Guipill Publications, 1966, p. 8.

same mason became one of Rivera's helpers, and it is probably from him that Rivera learned the simple method of true fresco after his disastrous experiments in the nopal technique."³¹

The so-called "nopal technique" or "nopal-fresco technique" was apparently developed by Xavier Guerrero. Guerrero, an artist who eventually gained some recognition as an easel painter, was the son of a master housepainter with native ancestry.³² While an adolescent working for his father he began to paint decorative scenes and friezes on walls. After serving in the revolution Guerrero worked as an assistant to Roberto Montenegro, a painter and politician who became known for his promotion of popular arts. Guerrero claimed to have used his technical skills gleaned from housepainting and "his Indian knowledge of local materials" to develop the nopal technique for use by Rivera in his 1923 murals for the Court of Labor in the Ministry of Education (*Secretaría de Educación Pública*) building in Mexico City.³³

"In order to give the paint more body, Guerrero conceived the idea of combining the juice of the nopal plant (a type of cactus) with the powdered color and water to be applied to the wet plaster of the wall, as in true fresco painting. Guerrero insisted that this was the method used by the ancient Aztecs in their frescoes. The technique had the further advantage of a patriotic significance, since Mexico City had been founded on the spot where, as the Aztec priests had prophesied, the migrating tribes sighted an eagle with a serpent in its beak, perched upon a nopal plant."³⁴

This nopal fresco technique was notoriously faulty, leading to rapid deterioration, and is unlikely to be representative of historical techniques used by successful indigenous artists of the past. In fact, it is doubtful whether any of the artists could be said to have

³¹. Schmeckebier, 1971 (1939). p. 41.

³². Stewart, Virginia. "Xavier Guerrero", 45 *Contemporary Mexican Artists. A Twentieth-Century Renaissance*. Stanford, California: Stanford University Press, 1951, pp. 42-44.

³³. According to Schmeckebier, the results were disastrous because the nopal juice does not combine with the plaster. Instead of drying as part of the plaster, the mixture of pigment and nopal juice forms a layer on the surface. As the plaster dried the water penetrated this glue-like coating forming blisters. Some of the murals have been repainted. There appears to be some uncertainty about the exact technique but there is a consensus that juice from nopal cactus was used. Schmeckebier 1971 (1939), p. 118; and Catlin, Staton L. "Mural Census," *Detroit Institute of Arts. Diego Rivera. A Retrospective*. New York: Detroit Institute of Arts and W.W. Norton, 1985, especially, pp. 241-242 and notes.

³⁴. Schmeckebier 1971 (1939), p. 118.

strictly followed historical indigenous practices, in part because after centuries of colonialism, in an era of modernization native artisans had adapted their practices to the context of the time, and in part because of the propensity of the muralists to combine techniques creatively. Indeed:

"Much was made in the press and by the artists of the rediscovery of ancient techniques in 1923, during the first phase of painting of the Ministry of Education, but it seemed to come down to little more than dipping the brushes in a bucket of water containing nopal cactus leaves."³⁵

Thus even formulas the artists used for their paints carried with them ideological associations. For example, Jorge Juan Crespo's description of Rivera's encaustic technique provides a choice between lemon tree resin (a European material which Rivera may have encountered in Paris) and copal resin (an indigenous product). Cost was sometimes cited as a factor in the choice of native materials over imported ones, but post-factum analyses stress symbolic interpretations in the choice of materials:

"Not only was copal more readily available and cheaper but it was an indigenous product still being used as a sacrificial incense by the Maya of the Yucatan. Indeed the very word copal is derived from the Nahuatl (Aztec) word *copalli*, which was their generic name for resins. It was used as a burnt offering in Precolumbian Mexico, a fact which no doubt appealed to Rivera's extreme nationalism"³⁶

Unusual combinations of modern tools and materials were common as well, sometimes with disastrous results for the conservation of the work.³⁷

Thus even at the very beginning of the Mexican renaissance, innovative new technical solutions -- like Dr. Atl's crayons for use in open-air schools -- were supported on ideological grounds (in the case of the crayons because they made artistic expression more accessible). Dr. Atl was credited by Siqueiros with providing the first impetus for

³⁵. Ades, p. 153.

³⁶. Pearce (1994), citing Jean Charlot, "Xavier Guerrero. Aztec Artist", *Art Making from Mexico to China*. no publication information, in Pearce (1994), p. 17.

³⁷. Rivera's encaustic technique used blowtorches to soften a wax medium which had been prepared using essential oils to slow drying and resins for tackiness. Problems with the work developed almost at once. Schmeckebier 1971 (1939), p. 40 and Pearce (1994), pp. 17-20.

research on new materials:

"We owe to him Mexico's first dissatisfaction with traditional materials: he was the first person, in a world which was fatally immersed in a mystical, regressive love for ancestral, archaic methods, to search for a modern physical medium. . . it is relatively unimportant that his solutions were only partial and that he was unable to foresee the importance of the tremendous chemical and mechanical discoveries of the contemporary world. Nevertheless, it was undoubtedly he who sowed the seeds of the immutable principle that an artist's material and tools determine the character of his work, whereas the academicians and the intellectual pseudo academic and pseudo-classical snobs of Europe believe it is determined by the artist's sensibility.³⁸

Siqueiros here was certainly overstating the commitment of the Mexican muralists to the primacy of materials, but painters did devote considerable energies to the search for innovative ways to express themselves and communicate their aesthetic and political visions of past and future.

Intense rivalries developed amongst muralists, especially amongst *los tres grandes* by the end of the 1920s which extended to disagreements over artistic materials and techniques and general studio practices. The goal of the muralists was to bring art to the people and Siqueiros maintained that modern synthetic materials and industrial tools offered the most promise of expanding the possibilities for realizing this goal. Rivera's followers on the other hand were at times just as dogmatic about the attributes of traditional fresco techniques. Indeed the animosities were such that Siqueiros' association with the new media may well have spurred the initial avoidance of synthetic media by partisans of rivals, but Rivera's devotion to fresco and belated experimentation with synthetic materials was also doubtless tied to his disastrous earlier technical experimentation with encaustic in the early 1920s. Similarly, Orozco, Ruffino Tamayo and others were more cautious at adopting the new media although they eventually did use some synthetic media.

³⁸. Siqueiros, "Atl, the Political and Theoretical Precursor" in Siqueiros. David Alfaro (trans. Sylvia Calles). *Art and Revolution*, London: Lawrence and Wishart, 1975, p. 70.

Ideology and Painting Media: Siqueiros' Accounts of Discovering the New Media

One of the most articulate documents on the discovery of these new materials by any artist of the period is the collection of autobiographical stories by Siqueiros called *Me llamaban el Coronelazo* ("They called me the 'Little Colonel'"), which was published posthumously. It is a collection of memoirs dictated to by Siqueiros while he was in Lecumberri prison in 1960-64, completed with the collaboration of his widow.³⁹ These stories, are reconstructions of earlier events which appear to have been often told by Siqueiros. They constitute an important shared memory for those interested in art materials in Mexico. Parts of the stories were repeated in only slightly varied versions by Mexican artists, conservators and paintmakers interviewed for this study about the history of synthetic materials in the arts.⁴⁰ The extent to which the stories may be considered folklore or fact is impossible to gauge, but the accounts provide a powerful depiction of the place of modern materials within Siqueiros' discourse which has become a salient feature of oral history legends about new art materials in Mexican art communities at least.

In his memoirs, Siqueiros proceeds with subtle determination to build a passionate defense of his use of modern materials on political, aesthetic and pragmatic grounds.⁴¹ He manages to combine very serious issues in an entertaining and at times humorous interpretation of events that culminate in his own triumph as an innovative artistic leader, issuing a few potshots at his rival Rivera along the way. These memoirs

³⁹. It was dictated to Julio Scherer García. The title refers to a story about his service during the Spanish Civil War and a panel painting he did by the same name. Siqueiros, 1977.

⁴⁰. In particular, stories about Siqueiros' contacts with chemists and businessmen involved with the paint industry were retold in individual interviews conducted by the author by Francisco Pego Moscosso, former head of the *taller de ensayo de los materiales de pintura y plásticos* at the National Polytechnical School, Luis Miró, director of Polytec Paint Company and Tomás Ugarte Zurian, a prominent conservator in Mexico City.

⁴¹. INBA, 1994; Cimet Shojjet, Esther. *Movimiento Muralista Mexicano. Ideología y producción*. México: Universidad Autónoma Metropolitana, 1992, especially pp. 49-91.

provide accounts of early events in appropriation of synthetic media in California, New York and Mexico. Because of the importance of events Siqueiros describes in later discussions by other artists and due to the relatively inaccessibility of the memoirs Siqueiros' accounts are excerpted extensively in the following pages.

Debunking the Paradox of Solidarity with Peasants and Advocacy of New Technologies

The first question Siqueiros addresses is the apparent paradox between solidarity with peasants and advocacy of new materials. This is accomplished by telling a story about a particular experience. Siqueiros' recollections of his first experiences with synthetic paints are prefaced by a highly-charged emotional account of a painting he did for peasant family while he was living in political exile in Taxco. He thus reminds readers of his solidarity with a humble and righteous symbol of the Mexican revolution: poverty-stricken rural peasants. These peasants approached him with a request that he use modern technology (photography) to help them carry out a ritual observance. They sent a boy messenger from their distant village who greeted him as follows:

" Mister Photographer, Mister Photographer, come with me, my father wants you to come to do a portrait of my little sister who died yesterday, because tomorrow they have to bury her. They put on her new dress and she is so pretty that it looks like she is still alive."⁴²

According to the tale, Siqueiros saddled up his horse and followed a boy a long distance to the outskirts of Taxco :

"On arrival at the house I could see the following spectacle: in a chair typical of the Mexican countryside, a multicoloured, decorated chair, was a cadaver of a girl of about two and a half years old, well positioned in natural posture and dressed in light green with a little pink bonnet or hat. And her small sister, a year and a half older, embraced the cadaver with the same naturalness that she would have had her sister been alive. Around them the family members gossiped calmly about whether the father of the creature had done the positioning well. Apparently all of them were waiting for me. And they all were thinking I would

⁴². "Señor fotógrafo, señor fotógrafo, venga usted conmigo, mi papá quiere que usted venga a retratar a mi hermanita, que se murió ayer, porque mañana temprano tienen que enterrarla. Ya le pusieron su vestido nuevo y está tan bonita que parece que estuviera viva." Siqueiros, 1977, p. 303. All translations of Siqueiros' writings cited are mine unless otherwise noted.

be a photographer. I told them that my procedure was more time-consuming, but better."⁴³

His oil portrait of the dead child was exhibited in a show of Siqueiros' work in Los Angeles in 1930 and elicited a good deal of negative commentary about the practice of painting portraits of the dead. In 1931 Siqueiros went to California where he felt called upon to defend not only himself as an artist but also Mexican peasant traditions in response to criticism of the portrait of the dead child. According to his account he defended the painting by countering with an anti-fascist condemnation of racist persecution in the southern U.S., and newspapers later took up the insults saying that he had referred to lynchings of blacks in the southern U.S. in an attempt to insult the entire country. When a few months later a scandal erupted over the mural called *Worker's Meeting or Meeting in the Street* (*Mitin en la calle*) because it depicted blacks and whites together in a public work of art, the newspapers repeated the criticism of the custom of making portraits of dead children.

With this story, Siqueiros establishes his solidarity with peasants and traditions yet portrays peasants as open to new techniques. He shows that a prominent well-known artist can participate creatively in peasant practices, for example by painting a portrait of a dead child. Therefore, by extension, he implies that his adoption of modern synthetic materials and tools is not a betrayal of the peasant interests, but rather a natural outcome of the socio-historical context in tune with the best interests of the poor.

⁴³. "Al llegar a la casa convenida pude ver el siguiente espectáculo: en una silla de las habituales del campo mexicano, silla policromada y decorada, estaba bien colocada, en postura natural, el cadáver de una niña de dos años y medio, vestida de verde claro, con una gorrita o sombrerito color de rosa. Y su hermanita, de un año y medio mayor que ella, abrazaba el cadáver con la misma naturalidad con que lo haría si su hermanita estuviera viva. En torno de ella, los familiares comentaban tranquilamente si la colocación había bien hecha por el papá. Por lo visto todos me estaban esperando. Y todos lo hacían pensando que yo era un fotógrafo. Les dije que mi procedimiento era más tardao, pero mejor." Siqueiros, 1977, p. 303.

Experiments with New Materials and Tools in California, 1932: *Meure el fresco!* (Death to Traditional Fresco Techniques!)⁴⁴

According to Siqueiros the revelation that "to a new society must correspond new material solutions" came in 1932 in California after agonizing reflection on the adoption of modern industrial materials and instruments instead of traditional fresco techniques.⁴⁵ Siqueiros began experimenting in earnest with new materials and tools made for commercial (rather than artistic) while working on an outdoor mural at the Chouinard School of Art in Los Angeles. He had been hired to teach a course in fresco painting:

"As a repercussion of Mexican muralism, the expression 'fresco painting' and 'fresco painter' had taken on certain proportions and a positively mystical sense, although no-one understood in reality what that literally meant."⁴⁶

Siqueiros decided to teach "al fresco" painting by doing a mural assisted by his students. His class included several artists who later attained prominence, for example Philip Guston.⁴⁷

This mural posed many technical problems: it was on a new concrete exterior wall exposed to harsh direct sunlight and rain. In Mexico at this time muralists worked on walls of brick, tile, or masonry generally in colonial buildings, not on concrete. Seeking substitutes for traditional fresco materials he consulted architects and engineers, notably Sumner Spaulding and Richard Neutra.⁴⁸ (Recall that consulting architects had

⁴⁴ . The chapter of his autobiography devoted to his account of the abandonment of traditional fresco techniques for modern materials, like the commercial nitrocellulose Duco lacquers —*Meure el fresco y nace el Duco* — might be roughly translated as "fresco dies and Duco is born" but this would not capture the theatricality, pompousness and ultimately the humour of the phrase which uses the Spanish equivalent of the English-language construction "The King is Dead. Long Live the King".

⁴⁵ . "a una nueva sociedad deben corresponder seguramente, nuevas soluciones materiales, en todos o en la mayor parte de sus órdenes". Siqueiros, 1977, p.307.

⁴⁶ . "Como repercusión del muralismo mexicano, las expresiones *fresco painting* y *fresco painter* habían tomado unas proporciones y un sentido positivamente místicos, aunque nadie entendiera en realidad lo que literalmente aquello quería decir." Siqueiros, 1977, p. 305.

⁴⁷ . According to Shifra Goldman, Siqueiros' assistants in Los Angeles included Millard Sheets and other members of the California Watercolor Society, Dean Cornwell, Reuben Kadish, Mayer Shaffer, Philip (Goldstein) Guston, Sanford McCoy, and possibly his brother Jackson Pollock. Goldman 1995 (1977), p. 6.

⁴⁸ . Hurlburt, Lawrence P. *The Mexican Muralists in the United States*, Albuquerque: University of

been encouraged by his mentor Dr. Atl.) Neutra, an architect of Austrian origin living in California at the time, who explained that the traditional mixture of lime and sand used for fresco would contract and expand in different ways than the cement wall leading the mural to shatter. In Siqueiros' words his reaction to the architect's assessment that it was impossible to use traditional fresco techniques on this outdoor concrete wall were shocking:

"Those affirmations coming from an expert in materials hit me like a bomb. I said to myself "Beloved Mexican mural painter, traditional fresco has died and, has died for ever". Racked with pain I went out into the street and repeated to everyone "Friends of mine, traditional fresco is dead". I said this in conferences and in articles. My words caused a commotion in the artistic field, not only in Los Angeles, but in all of the United States. "Now it is not possible to continue painting on wall in the way which has been done since the Middle Ages and the Renaissance and possibly so lamentable a discovery will imply the disappearance of the genre of mural painting."⁴⁹

These insights were a great disappointment to his students at the Chouinard School who had hoped to study fresco painting. They also raised "the specter of hunger for my household" (since he would be out of a job unless he managed to teach a course in mural painting). Siqueiros recounts spending many sleepless nights asking himself if there weren't substitutes for the traditional procedures used by Egyptians, painters of the Middle Ages and the Renaissance and in colonial Mexico. More consultations with the architect Neutra helped him to work out a plan to paint over a coating of cement and sand which was a significant departure from traditional fresco technique.

By his own account the moment Siqueiros decided that the artists' materials

New Mexico Press, 1989, p. 207.

49. "Aquellas afirmaciones, y aquellas afirmaciones provenientes de un sabio en la materia, me cayeron como una bomba. Me dije a mí mismo: «Querido pinto muralista mexicano, el fresco tradicional ha muerto y ha muerto para siempre». Después, transido de dolor, salí a la calle, fui a todas partes, repitiéndome: «¡Amigos míos, el fresco tradicional ha muerto!» La dije en conferencias y en artículos. Mis palabras causaron verdadera conmoción en el campo artístico, no sólo de Los Angeles sino de todos los Estados Unidos. «Ya no se puede seguir pintando sobre paredes como lo han hecho los hombres durante varias decenas de siglos, como lo hicieron en la edad Media y en el Renacimiento y posiblemente tan lamentable descubrimiento implica la desaparición del género pintura mural.» Siqueiros, 1977, pp. 306-307.

should correspond to the artist's times, he became almost frenetic, causing a minor public disturbance:

"Truly," I said almost shrieking, which obligated passersby to pause before this strange duo, " . . . to a new society surely must correspond new material solutions in all or in the greater part of its order. . . [sic]. If building materials were different, concrete, glass, plastics, new metal alloys, one must find the correlated materials in the direction of pictorial creation, of artistic creation for the media of the art of painting."⁵⁰

His search for new materials and techniques suitable for art on modern buildings had only just begun. The cement set very quickly and Siqueiros sought a new instrument that would allow for faster application of colours. When he suggested using an air gun to apply the paints his class reacted with doubt. One of the students, an older English painter with some mural experience exclaimed:

"The sensitivity of the plastic artist resides fundamentally -- I say-- in the ends of the fingers, in the tips of the fingers. How could it be possible to use repugnant metal instruments, then, for the object of plastic creation?"⁵¹

Another student apparently offered more resistance to the idea of adopting mechanical tools from industry:

"The art of painting has always been an artisanal art and I do not believe that it can some day reach the point of being another thing. The artist needs to use the hands, to seize the plastic with his own touch and to create with the slowness which marks the very spirit of aesthetic emotion."⁵²

⁵⁰. "«De verdad -- dije yo, casi gritando, lo que obligó a los transeúntes a detenerse ante este extraño dúo --. Artistas de un periodo de la historia en que los materiales y las herramientas habían llegado a ser estúpidamente verdaderos accidentes sin importancia en el fenómeno de la creación, un fenómeno que parecía corresponder exclusivamente al ser creador más allá de cualquier otra configuración de la vida material, now nabimos perdido en los vericuetos de un problma que en el fondo tenía que ser perfecta y absolutamente sencillo: a una nueva sociedad deben corresponder seguramente, nuevas soluciones materiales, en todos o en la mayor parte de sus órdenes. . . Si los materials de edificación eran diferentes, el concreto, el vidrio, los plásticos, neuvas ligas metálicas, habría que localizar los materiales correlativos en la dirección de la creación pictórica, de la creación artística, por los medios del arte de la pintura.» Siqueiros, 1977, p. 307.

⁵¹. Note the publication contains a typographical error in the spelling of Dean Cornwell's name (Corwell). "El primero en darle dalida a su duda y disgusto por lo que ya podía implicar un propósito de mi parte, fue el pinto inglés Dean Corwell, artista ya maduro, que había pintado algunos murales en su propio país y uno en la misma ciudad de Los Angeles. «La sensibilidad del artista plástico radia fundamentalmente -- dijo-- en la punta de los dedos, en la yema de los dedos. ¿Cómo sería posible usar repugnantes herramientas metálicas, pues, para el objeto de la creación plástica?» Siqueiros, 1977, p. 308.

⁵². «El arte de la pintura ha sid siempre un arte artesanal y no creo que pueda algún día llegar a ser otra

By his account Siqueiros went home devastated. The students wanted to use traditional techniques which experts in materials said were doomed to fail. Yet, once again he thought of a solution to his immediate problems which in later discourse he place in a more general context pertinent to the use of modern techniques in art. Siqueiros explained that he countered the resistance of his students to the use of air guns with arguments that all art relies on the tools of its specific socio-historic context:

"But when have there been manifestations of plastic arts without the use of machines?" Was not the use of a hard rock to scratch on a a softer rock . . . a mechanical procedure, [using] a mechanical tool? And paintbrushes of handles and hair . . . ? And the utensils or molds used already by the first Renaissance [artists] when they wanted to copy for example the ornamental parts of their work tools, weren't they tools?

In reality . . . never has it been possible to do plastic arts without the use of tools. And if [the tool] was out of stone, in prehistory, and of wood and hair later, this was due simply to the corresponding degree of evolution of technique and industry. And all those tools did not impede the circulation of plastic emotion throughout the entire body, passing through the hand and later by the fingers to arrive finally at the [finger]tips."⁵³

He finally convinced his students to try using the principles of an air gun. This initially led to disappointing work which Siqueiros described as "hideous". This brought him to another disputed point in arguments about the place of tools and materials in art. Siqueiros maintained that tools and materials affect art, a view which many artists did not share. In his account the radical change in technique had spurred the realization that artists had to listen to the "voices" of their tools and materials, a theme that was

cosa. El artista necesita meter las manos, agarrar la plástica con su propio tacto y crear con la lentitud que varca el propio espíritu de la emoción estética». Siqueiros. 1977, p. 308.

⁵³. «¿Pero cuándo se han producido manifestaciones de artes plásticas sin el uso de máquina?» ¿No fue acaso procedimiento mecánico, herramienta mecánica el uso de una piedra dura para rayar sobre una piedra más blanda? ¿Y los pinceles de palo y pelos, de palos y pelos múltiples, de pelos de camellos, de pelos de cochino, de cerdas de toda clase de caballos, aristócratas y plebeyos? ¿Y no eran acaso máquinas los esténsiles o moldes qu usaban ya los primeros renacentistas cuando tenían que repetir, ejemplo, las partes ornamentales de sus trabajos? ¿Y los cepillos, los rastrillos, los rodillos. . En realidad, . . más ha sido posible hacer artes plásticas sin el uso de herramientas. Y si éstas fueron de piedra, en la prehistoria, y de madera y pelos más tarde, esto se debió simplemente al grado correspondiente del desarrollo de la técnica y de la industria. Y todas esas herramientas no impidieron que la emoción plástica circulando por todo el cuerpo y pasando por las manos y más tarde por los dedos llegara finalmente a las yemas." Siqueiros, 1977, p. 309.

repeated twenty years later by proponents of synthetic media in the U.S. as though it was a new idea:

"tools, like materials, are not inert elements in the hands of the creator of plastic art, but rather determining forces in [artistic] manners and styles. The first thing that the artist must understand is that nothing can be achieved if one is not capable of listening to the generic voice of one's tools, as [is the case] with one's materials. . . . It is necessary then, to unravel from our new tool its own voice, as well as the limitations of its functional utility. Its new and novel possibilities must be extracted. . . . What did this new instrumentation offer us? Little by little we began to wrest from its core its until then unknown gifts."⁵⁴

Using the air gun provided new challenges in terms of how the painting was executed, allowing long, uninterrupted gestural strokes and rapid coverage of large areas. But air guns worked best when used to apply the industrial coatings for which they were designed. Siqueiros found that traditional artists' media (encaustic, tempera, watercolours and oils) were not suited to the air guns available in the 1930s and he set out on a quest for new painting media:

"Naturally, speaking in general terms, to new instruments should necessarily correspond new materials. . . . We have exchanged the instruments of execution, tools of artisanal origin, for tools of industrial origin and function; so we had to find materials of industrial origin as well."⁵⁵

Yet once again the students complained, asking:

"How is it possible to create works of art with the crude painting materials produced by industry, also for crude uses?" How are we going to paint works of art with the same materials which are used to paint cars, which are vulgar, or refrigerators, even more vulgar . . . even if there is a certain spirituality in airplanes?"⁵⁶

⁵⁴ "Entonces fue cuando empecé a comprender algo que me parece de la mayor trascendencia: las herramientas, como los materiales, no son elementos inertes en manos del creador de artes plásticas, sino fuerzas determinantes de maneras y de estilos plásticos. Lo primero que debe comprender el artista de la plásticas es que nada podrá realizar si no es capaz de escuchar la voz genérica de sus herramientas, como de sus materiales. . . . Había pues, que desentrañarle a nuestra nueva herramienta su propia voz, como las limitaciones de su utilidad funcional. Había que extraer de ella sus nuevas, novísimas posibilidades. . . . ¿Qué nos ofrecía el nuevo instrumental? Poco a poco comenzamos a arrancarle de las entrañas su hasta entonces desconocida donación." Siqueiros, 1977, p. 310.

⁵⁵ "Naturalmente, a nuevas herramientas, hablando en términos generales, deben corresponder necesariamente nuevos materiales. . . . Habíamos cambiado las herramientas de ejecución, las herramientas de origen artesanal, por herramientas de origen y función industrial: había, por lo tanto, que encontrar los materiales de origen industrial, también." Siqueiros, 1977, p. 312

⁵⁶ El planteamiento de este problema en el equipo fue una vez más motivo de gimoteos y llantos.

Siqueiros claims to have experienced serious doubts himself at the idea of using commercial paints. Although commercial artists had used airbrushes, he had until this point distinguished himself as a "fine artist" by employing artists' quality paints. In his words:

"Once again, though it was transitory, the old aesthete born at the end of the 19th century was reborn in me. With the air gun we had [experienced] real intoxication, notwithstanding the fact that for paint we were using different types of tempera, but tempera that had been used in the past to make interesting works of art. "What's going to happen now as we put together 'crude materials and crude instruments'". Certainly poster painters had begun already to use small airbrushes and better-drying paints than the traditional ones, but they were just that, poster painters, and those materials were used to create a minor art, a grotesque art, commercial advertising, the poster. But for works similar to the Sistine Chapel of Michelangelo, or the Academy of San Rocco of Tintoretto, for example, could these concoctions have equal or at least approximately the same utility?"⁵⁷

Siqueiros' meditations brought him once again to an analysis of the issues raised by new materials which supported his decision to adopt them:

"in the past, the master works of art and objects for more crude uses were painted with exactly the same pictorial material, because there are no others."⁵⁸

However, he did recognize that artists' colours traditionally were made with better materials designed to last than the paint made by essentially the same processes for objects in daily use:

Una vez más Dean Corwell [sic] y quienes padecían de los mismos escalofríos estéticos que él, volvieron a la carga. «¿Cómo es posible crear obras de arte con los groseros materiales pictóricos que produce la industria, para fines groseros también? ¿Cómo vamos a pintar obras de arte con los mismos materiales que se pintan los groseros automóviles y los más aún groseros refrigeradores . . . ya que en los aeroplanos hay cierta espiritualidad?» Siqueiros, 1977, p. 312.

⁵⁷. "Otra vez, aunque fuera transitoriamente, renació en mí el viejo esteta nacido a fines del siglo XIX. con la pistola de aire hacíamos verdaderas «jumaredas», no obstante que para pintar seguíamos empleando diferentes tipos de temple, pero de temple que habían servido en el pasado para hacer obras interesantes en la plástica. «¿Qué iba a pasar ahora con el agregado 'materiales groseros a instrumentos groseros'?» Claros que los pintores cartelistas habían empezado ya a usar los aerógrafos pequeños y pinturas de mayor secamiento que las tradicionales, pero ellos eran eso, cartelistas y aquellos materiales servían para hacer un arte menor, un arte grotesco, anuncios comerciales, el cartel. Pero para obras similares a la Capilla Sixtina de Miguel Ángel o a la Academia de San Rocco, del Tintoretto, por ejemplo, ¿podrían tener esos mejurjes utilidad igual o siquiera aproximada?", Siqueiros, 1977, p. 312.

⁵⁸. "... en el pasado, las obras maestras de arte y los objetos de uso más groseros ese pintaban exactamente con los mismos materiales pictóricos, porque no había otros." Siqueiros, 1977, p. 312.

"... *Las Meninas* [a famous 17th century Spanish painting] was painted the same as the carriages in daily use and even the planks in the lavatories. The sole difference is rooted in that oil painting destined for art is more elaborate in its "concoction", ... In the case of the work of art, the oil ... was more carefully cooked and the pigments were from better locations, better washed and much better ground, but nothing more. Exactly the same thing is happening now." ⁵⁹

Siqueiros' enthusiasm for the potential of the new industrial materials and equipment did not blind him to the potentially poor quality of some of the new paints. He suspected that industrialists would tend not to use materials with the greatest permanence and durability, in order to increase demand for the coatings. These concerns resurfaced later but did not dissuade him from trying new industrial and commercial paints. He began to use commercial paints at this time although he appears not have adopted the new nitrocellulose lacquers (for which he became famous) until later.⁶⁰

While in California Siqueiros completed three murals. The first, *Meeting in the Street* (*Mitin in la calle*) for the Chouinard School of Art was completed in two weeks. The use of waterproof cement, air guns and stencils were technical breakthroughs for Siqueiros foreshadowing further experimentation. Here too he began to try to use photographs in lieu of preliminary sketches although he did not fully incorporate photographic images into his working process until later. The mural depicted construction workers taking a break from their labour to listen to a speech by a labour organizer surrounded by downtrodden black and white poor people who were meant to represent the subject of the speech. He also painted a mural entitled *America*

⁵⁹. " con óleo, pintura de aceite ... se pintaba lo mismo *Las Meninas* que los carruajes de uso diario y hasta las tablas de los excusados. La única diferencia radicaba en que la pintura al óleo destinada al arte era más cuidadosamente elaborada en su «cocina», en su primario laboratorio de entonces. En el caso de la obra de arte, el aceite de linaza o de nuez era cocido o mejor cocido, y los pigmentos eran mejor localizados, mejor lavados, y más bien molidos pero nada más. Exatamente lo mismo podía hacerse ahora." Siqueiros, 1977, p. 312.

⁶⁰. According to conservators at the Getty Institute of Conservation involved with the restoration of his mural *America Tropical*, Siqueiros used Pottinger Paints in 1932. Conservations with Michelle Derrick (conservation scientist) and Francesca Piqué (conservator), Scientific Department, Getty Conservation Institute, Santa Monica, California, April-June 1994. Tomás Zurian Ugarte did a technical analysis of the painting in 1979. Interview with Tomás Zurian Ugarte and Lolita Fernandez by Jan Marontate, Mexico City, June 1994.

Tropical for the Plaza Art Center which is now being restored by the Getty Conservation Institute, and *Portrait of Present-Day Mexico* for a private home in the semi-enclosed patio of the film director Dudley Murphey, a close friend of S.M. Eisenstein who had met Siqueiros in Mexico and is thought to have been influential in his use of photography in developing pictorial ideas for his murals.⁶¹

During his stay in California, he gave a talk at the Hollywood John Reed Club called "The Vehicles of Dialectico-Subversive Painting", based on the experiences of his team of painters --the Bloc of Mural Painters-- (actually mostly art students in his class on mural painting). Siqueiros' discourse emphasized his experiments with new industrial technology, movie cameras, collective "team" painting, and revolutionary (Marxist) subject matter.⁶²

In the realm of political activism, Siqueiros was a vocal public figure. His strident criticism of racism, American imperialism and Mexican politics in public speeches and in his murals brought about his deportation from California in November 1932. There was such strong opposition to the type of political imagery and social commentary in art promoted by Siqueiros that a subsequent exhibition by the Bloc of Mural Painters was raided by the Los Angeles Police "Red Squad". "The police actually shot and bashed with rifle butts the figures of blacks in the paintings".⁶³

The Birth of "Il Duco": Siqueiros' Passion for Synthetic Painting Mediums and The New York Experimental Workshop

Siqueiros spent 1933 in South America where he continued his technical and conceptual experimentation with mural painting. There he used photographs to develop dynamic large-scale compositions depicting various exaggerated angles of viewing, and

⁶¹. Artists Luis Arenal, Rubin Kadish and Fletcher Martin also worked on the mural.

⁶². Hurlburt quotes and gives a English-language summary of the contents of the talk in "Appendix A: Technique of Fresco Painting", in Hurlburt, 1989, especially pp. 255-256.

⁶³. Hurlburt, 1989, p. 216.

he experimented with formulas for synthetic paint and commercial lacquers.⁶⁴ He continued his practice of consulting experts on materials and apparently was given "a medium called silicate" by a German chemist in Argentina which he used in mural painting with the aid of the chemist.⁶⁵ Although he had tried commercial paints in California he appears to have discovered new synthetic automotive lacquers (based on nitrocellulose and sold by Du Pont under the brand name "Duco") in Montevideo, Argentina "by accident" while looking for other paints. There he began to develop his passion for the Duco lacquers which he apparently used for the first time to paint *Proletarian Victim*, the image of a bound female nude (see Figure 9). He also used these new media and techniques to do a large (200 square-foot) mural in the country home of a prominent newspaper editor which he called *Ejercicio Plástico* (Plastic Exercise). He was again deported in late 1933 for political reasons.

Siqueiros was allowed to return to the United States in early 1934 where he championed the use of the tools of modern industry in art and criticized his rival Rivera for his "archeological" point of view -- referring both to the iconographic content of Rivera's depictions of indigenous history and his adherence to traditional fresco techniques.⁶⁶ His feuding with Rivera continued on in Mexico. Siqueiros returned to

⁶⁴ Siqueiros may have used a formula credited to Adolph Keim, former president of a German group of painters, conservators and paintmakers devoted to "rational painting". Siqueiros, D. *Qué es Ejercicio Plástico y cómo fue realizado*. Pamphlet published in Buenos Aires, December 1933 and cited in Hurlburt, 1989, p. 285, n. 57. See also Mayer, Ralph. *The Artists' Handbook of Materials and Techniques*. New York: Viking Press, 1970 revised version of 1940 original, pp. 361-2. Lodge identifies the material used by Siqueiros as ethyl silicate rather than potassium silicate, however does not provide documentation. Since he identifies this as a medium developed by a "the German chemist Kaim" he may be basing this on Gutiérrez' description which also misspells Keim's name. The two may be confounding the chemical products. Lodge, Robert G. "A History of Synthetic painting Media with Special Reference to Commercial Materials". *American Institute for Conservation Preprints*, June 1988, p. 118.

⁶⁵ Gutiérrez recounts a conversation with Siqueiros about this stating that "the chemist called the silicate process "the KAIM process" after its discoverer". This probably was the method developed by Adolph Keim using potash waterglass or potassium silicate not ethyl silicate. Gutiérrez, José L. *From Fresco to Plastics: New Materials for Easel and Mural Paintings*. National Gallery of Canada, Ottawa, 1956, pp. 44-45.

⁶⁶ Siqueiros, D. "Rivera's Counter-Revolutionary Road", *New Masses*, May 29, 1934, pp. 16-19. and

New York in 1936 as an official delegate to the First American Artists' Congress and set up what came to be known as the "Siqueiros Experimental Workshop -- A Laboratory of Modern Techniques in Art".⁶⁷

This workshop in New York became a center for experimentation with new materials that attracted artists from Latin America as well as young Americans who later rose to prominence, like Morris Louis and Jackson Pollock and a bevy of lesser known artists.⁶⁸

In the workshop Siqueiros continued to develop modern art techniques and to create "art for the people", including many posters and floats for the Communist Party. Siqueiros' passion for the new industrial paints, particularly Duco, earned him the nickname "Il Duco", an affectionate if teasing wordplay used by his students which makes reference to Italian Fascist Benito Mussolini's nickname ("Il Duce) even though Siqueiros was an adamant anti-fascist.⁶⁹ Siqueiros was fascinated by the new effects he could obtain with the synthetic automotive lacquers:

"The absorption of the colors on the surface produced snails and conches of forms and sizes most unimaginable with the most fantastic details possible. But that accidental phenomenon could have plastic value only with the means in which we could coordinate, direct, and utilize it, that is, what we made using such a premise."⁷⁰

The new materials and techniques fit into Siqueiros' program of "dialectical

Hurlburt, 1989, p. 221.

⁶⁷. The workshop opened in April 1936 at 5 West 14th Street. For information based on interviews with workshop participants in the 1970s see Hurlburt, 1989, pp. 221-231 and Hurlburt, L.P. "The Siqueiros Experimental Workshop, New York 1936" *Art Journal*. Spring, 1976, pp. 237-346. More recently interviews by Jürgen Harten with workshop participant Roberto Berdicio are reported in an analysis of the relationship between Siqueiros and Jackson Pollock. Harten, Jürgen. "When Artists were still Heros". *Siqueiros/Pollock Pollock/Siqueiros*, Kunsthalle Düsseldorf and Dumont publishers, 1995, pp. 43-57.

⁶⁸. The "initial nucleus" of artists included Americans Jackson Pollock, Sanford McCoy, Harold Lehman, Axel Horr (later Horn), George Cox, Louis Ferstadt, Clara Mahl (later Claire Moore), and Mexicans Luis Arenal, Antinio Pujol, Conrado Vasquez, José Gutiérrez and the Bolivian Roberto Berdicio. Hurlburt, 1989, p. 221.

⁶⁹. Gutiérrez and Roukes, 1960; Siqueiros, 1979.

⁷⁰. Siqueiros in a letter to Blanca Luz Blum, June 9, 1936 translated and quoted in Hurlburt, 1989, p. 224.

methodology" which workshop participants explored using a "system" of "controlled effects" among them the exploration of "drips" in large-scale works which later became an essential feature of Jackson Pollock's abstract expressionist work.⁷¹ (See Figure 10.)

The 1966 recollections of one of the workshop participants, Axel Horn, about his experiences there with artist Jackson Pollock demonstrate the profound effect Siqueiros practices and discourse had on the young artists in his workshop. In Horn's words:

"Siqueiros, active revolutionary and naughty boy of Mexican art, came to New York. Jack and myself along with others of our group, became part of a workshop that Siqueiros started for the express purpose of experimentation with new technological developments in materials and tools. Paints including the then new nitro-cellulose lacquers and silicones, surfaces such as plywoods and asbestos panels and paint applicators including airbrushes and sprayguns, were some of the materials and techniques to be explored and applied. We were going to put out to pasture the "stick with hairs on its end" as Siqueiros called the brush.

New art forms for the use and exposure to large masses of people were to be initiated. Our stated aim was to perfect such new media even though they might be comparatively impermanent, since they would be seen by hundreds of thousands of people in the form of floats, posters, changeable murals in subways, multi-reproduced graphics, etc."⁷²

Horn's memories provide insights into the appropriation of new approaches to studio practices which came to be seen as characteristic of the New York avant-garde in the late 1940s and 1950s:

"Spurred on by Siqueiros, whose energy and torrential flow of ideas and new projects stimulated us all to a high pitch of activity everything became material for our investigations. For instance, lacquer opened up enormous possibilities in the application of color. We sprayed through stencils and friskets, embedded wood, metal, and sand and paper. We used it in thin glazes or built it up into thick globs. We poured it, dripped it, spattered it, hurled it at the picture surface. It dried quickly, almost instantly, and could be removed at will even

⁷¹. The issue of whether Pollock was influenced by Siqueiros has been much debated. Certainly Siqueiros' free-wheeling approach to the application of paint and his large-scale "portable murals" may be echoed in Pollock's later enormous "easel" paintings which exploited "controlled accidents" like drips. However, Thomas Hart Benton, a former teacher of Pollock later claimed that the idea for using dripping came from earlier experiences when Benton and Pollock worked together on glazing pottery in a money-making venture. Woody, R. interview by Jan Marontate, 1994.

⁷². Horn, Axel. "Jackson Pollock: The Hollow and the Bump". *The Carleton Miscellany*, volume VII, No. 3, summer 1966, pp. 80-87. Quote from p. 85.

though thoroughly dry and hard. What emerged was an endless variety of accidental effects. Siqueiros soon constructed a theory and system of "controlled accidents".

I remember us secretly appropriating a Lazy Susan from one of the tables in a neighboring cafeteria. Fastening pieces of plywood to it, we poured different colored lacquers on it as it was spun. The striking halations of color due to centrifical [sic] action that resulted were forthwith introduced into our paintings. . ."⁷³

The extravagant gestural qualities of this way of painting came to be associated with abstract expressionism or Action Painting. Yet the freedom with materials, the abandonment of the brush and the adoption of synthetic media also resurfaced in other high culture stylistic movements, such as the Washington Color school under the influence of workshop participant Morris Louis. (See Figure 11). Furthermore the critical triumphs of Louis' work were intimately connected with the development of synthetic paints for artists by New York paintmakers as we shall see. Another workshop participant was an aspiring but unknown Mexican artist named José Gutiérrez, who would later become an influential teacher, artists' handbook author and pioneer in synthetic paintmaking for artists.

Contacts with the Chemical Industry and Other Experts

In New York Siqueiros continued to seek technical advice from chemists, architects and engineers. Siqueiros and his disciples were in contact with chemical suppliers out of principle (socialist solidarity with the tools of the worker), out of economic interest (to obtain deals on paint in order to be able to afford to execute immense paintings) and to keep abreast of new materials and techniques.

In his memoirs, Siqueiros recounts that he and members of the New York Workshop conspired to befriend the chief chemist of a manufacturing firm which produced nitrocellulose-based industrial paints. They spent long evenings drinking with

⁷³. Horn, 1966, pp. 85-86.

the chemist with the end in mind of wresting from him trade secrets about two technical issues: 1) how to improve the lightfastness of the paints, and 2) how to make them less shiny.⁷⁴ They were unsuccessful at obtaining technical details, even by plying him with large quantities of alcohol. According to Siqueiros, one day, the chemist was driving with Siqueiros past a car dump. The chemist stopped, searched through the debris in the dump for a few moments and finally selected a piece of scrap. The metal had oxidized but the coat of paint remained integral, a totally intact film of color. The chemist explained that the longevity of the synthetic media constituted a disadvantage for commercial paint manufacturers who sought to make them more ephemeral in order to increase sales. As regards the high gloss finish which artists initially found difficult to handle, the chemist explained that this glossy finish had only been attained with a huge investment of time and money since the paints were initially matte -- just what the Siqueiros and other artists wanted at that time. In other words, Siqueiros believed he had discovered through the chemist that the large commercial paint manufacturers were deliberately sabotaging the characteristics of what could be a fine painting material for artists.

In his New York studio, Siqueiros started to use so much of the new paints that he went to talk to an official at the Du Pont company, maker of the synthetic lacquer Duco which he so loved. He thought that the company would be flattered by his use of their material and would give him free paint. In his words:

"I believed this practice would give me unquestionable rights, so that the big paint-producing companies would hand out for free all [the paint] that I could need. I had set my sights on Dupont [sic], the giant American empire manufacturing the famous Duco. And after some days of effort, I obtained an interview with the general manager, a typical high-level Yankee industrialist bureaucrat. Once before him, I told him categorically : "I am the first artist to lay claim to the use of painting materials with a synthetic resin base. And already at

⁷⁴. The chemist was from a company identified as "Nitro Valspar Valentine" described in the memoirs as "la mejor fábrica americana de pinturas industriales a base de nitrocelulosa" (the best American manufacturer of nitrocellulose-based industrial paints). Siqueiros, 1977, p. 315.

this moment there are at least some fifty American or American-based painters who are following my example. What will happen when all the painters of the world . . . grasp the convenience of using these modern materials. . .?" I didn't possess the least doubt that the reply to my statement, would be the following, pronounced with the greatest emotion: "Señor Siqueiros, from this moment on we offer you all the support of the powerful Dupont Company of the United States. . . all the material that is necessary for you, for your New York studio, and all other similar studios that will be founded anywhere as a result of your pioneering example, of your most valiant work." ⁷⁵

However, this was not the reaction of the "high official" of the Du Pont corporation who explained to Siqueiros instead that even if all the artists in the world all began to use painting materials in the Du Pont company's line, this would be of no commercial significance beside all of the lacquer used to coat cars, refrigerators, airplanes and other machines. Furthermore, according to Siqueiros' account, the chemical company representative expressed concern that artists might jeopardize the monopoly of the paintmaking company by learning how to make it themselves:

"you artists intentionally or not could wind up discovering our industrial secrets, and that . . . would be a sign of tremendous stupidity on our part for having allowed it: No, Señor Siqueiros, he said, not only will we not encourage artists to use our materials, we will discourage them with all the means at our disposal, and for that we will count on the great experience of our world-wide advertising department". ⁷⁶

⁷⁵. "Cuando en mi taller de Nueva York, ampliando mis práctica de Los Angeles, pude darle mucho amplitud al use de pinturas a base de resinas sintéticas, créi que esta práctica me daría indudable derecho a que las grades compañías productoras de pinturas de esa naturaleza me proporcionaran gratuitamente todas las que a mi me podían hacer falta. Para el objeto puse la mira en la Dupont, gigantesca empresa norteamericana fabricante del famoso Duco. Y después de algunos días de esfuerzo, conseguí una entrevista con el gerente general, típico alto funcionario industrial yanqui. Ya frente a él, categóricamente le dije: «Soy el primer artista pintor que reivindica el uso de materiales picóricos a base de resinas sintéticas. Y ya en estos momentos hay cuando menos unos cincuenta pintores norteamericanos, o radicados en los Estados Unidos, que están siguiendo mi ejemplo. ¿Qué será cuando todos los pintores del mundo y entre ellos los sesenta y cinco mil que viven en París, comprendan la conveniencia de usar materiales modernos, en vez de los materiales descubiertos hace miles de años, como es el caso del óleo, que aún siguen usando?» No me cabía la menor duda que la respuesta a mi discurso, pronunciado con la emoción mayor de todas las ocasiones, en mi caso, iba a ser la siguiente: «Señor Siqueiros, a partir de este momento tendrá usted todo el apoyo de la poderosa compañía Dupont de los Estados Unidos. Y ese apoyo se traducirá en que mediante simples vales usted podrá recoger de nuestras bodegas todo el material que necesite para usted, su taller de Nueva York y todos los talleres similares que se funden en cualquier parte, como resultado del ejemplo del pionero, obra valiosísima de usted». Siqueiros, 1977, pp. 314-315.

⁷⁶. "Ustedes los artistas, queriéndolo o no, acabarían por descubrir nuestros secretos industriales y eso

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methodology" which workshop participants explored using a "system" of "controlled effects" among them the exploration of "drips" in large-scale works which later became an essential feature of Jackson Pollock's abstract expressionist work.⁷¹ (See Figure 10.)

The 1966 recollections of one of the workshop participants, Axel Horn, about his experiences there with artist Jackson Pollock demonstrate the profound effect Siqueiros practices and discourse had on the young artists in his workshop. In Horn's words:

"Siqueiros, active revolutionary and naughty boy of Mexican art, came to New York. Jack and myself along with others of our group, became part of a workshop that Siqueiros started for the express purpose of experimentation with new technological developments in materials and tools. Paints including the then new nitro-cellulose lacquers and silicones, surfaces such as plywoods and asbestos panels and paint applicators including airbrushes and sprayguns, were some of the materials and techniques to be explored and applied. We were going to put out to pasture the "stick with hairs on its end" as Siqueiros called the brush.

New art forms for the use and exposure to large masses of people were to be initiated. Our stated aim was to perfect such new media even though they might be comparatively impermanent, since they would be seen by hundreds of thousands of people in the form of floats, posters, changeable murals in subways, multi-reproduced graphics, etc."⁷²

Horn's memories provide insights into the appropriation of new approaches to studio practices which came to be seen as characteristic of the New York avant-garde in the late 1940s and 1950s:

"Spurred on by Siqueiros, whose energy and torrential flow of ideas and new projects stimulated us all to a high pitch of activity everything became material for our investigations. For instance, lacquer opened up enormous possibilities in the application of color. We sprayed through stencils and friskets, embedded wood, metal, and sand and paper. We used it in thin glazes or built it up into thick globs. We poured it, dripped it, spattered it, hurled it at the picture surface. It dried quickly, almost instantly, and could be removed at will even

⁷¹. The issue of whether Pollock was influenced by Siqueiros has been much debated. Certainly Siqueiros' free-wheeling approach to the application of paint and his large-scale "portable murals" may be echoed in Pollock's later enormous "easel" paintings which exploited "controlled accidents" like drips. However, Thomas Hart Benton, a former teacher of Pollock later claimed that the idea for using dripping came from earlier experiences when Benton and Pollock worked together on glazing pottery in a money-making venture. Woody, R. interview by Jan Marontate, 1994.

⁷². Horn, Axel. "Jackson Pollock: The Hollow and the Bump". *The Carleton Miscellany*, volume VII, No. 3, summer 1966, pp. 80-87. Quote from p. 85.

though thoroughly dry and hard. What emerged was an endless variety of accidental effects. Siqueiros soon constructed a theory and system of "controlled accidents".

I remember us secretly appropriating a Lazy Susan from one of the tables in a neighboring cafeteria. Fastening pieces of plywood to it, we poured different colored lacquers on it as it was spun. The striking halations of color due to centrifical [sic] action that resulted were forthwith introduced into our paintings. . ."⁷³

The extravagant gestural qualities of this way of painting came to be associated with abstract expressionism or Action Painting. Yet the freedom with materials, the abandonment of the brush and the adoption of synthetic media also resurfaced in other high culture stylistic movements, such as the Washington Color school under the influence of workshop participant Morris Louis. (See Figure 11). Furthermore the critical triumphs of Louis' work were intimately connected with the development of synthetic paints for artists by New York paintmakers as we shall see. Another workshop participant was an aspiring but unknown Mexican artist named José Gutiérrez, who would later become an influential teacher, artists' handbook author and pioneer in synthetic paintmaking for artists.

Contacts with the Chemical Industry and Other Experts

In New York Siqueiros continued to seek technical advice from chemists, architects and engineers. Siqueiros and his disciples were in contact with chemical suppliers out of principle (socialist solidarity with the tools of the worker), out of economic interest (to obtain deals on paint in order to be able to afford to execute immense paintings) and to keep abreast of new materials and techniques.

In his memoirs, Siqueiros recounts that he and members of the New York Workshop conspired to befriend the chief chemist of a manufacturing firm which produced nitrocellulose-based industrial paints. They spent long evenings drinking with

⁷³. Horn, 1966, pp. 85-86.

the chemist with the end in mind of wresting from him trade secrets about two technical issues: 1) how to improve the lightfastness of the paints, and 2) how to make them less shiny.⁷⁴ They were unsuccessful at obtaining technical details, even by plying him with large quantities of alcohol. According to Siqueiros, one day, the chemist was driving with Siqueiros past a car dump. The chemist stopped, searched through the debris in the dump for a few moments and finally selected a piece of scrap. The metal had oxidized but the coat of paint remained integral, a totally intact film of color. The chemist explained that the longevity of the synthetic media constituted a disadvantage for commercial paint manufacturers who sought to make them more ephemeral in order to increase sales. As regards the high gloss finish which artists initially found difficult to handle, the chemist explained that this glossy finish had only been attained with a huge investment of time and money since the paints were initially matte -- just what the Siqueiros and other artists wanted at that time. In other words, Siqueiros believed he had discovered through the chemist that the large commercial paint manufacturers were deliberately sabotaging the characteristics of what could be a fine painting material for artists.

In his New York studio, Siqueiros started to use so much of the new paints that he went to talk to an official at the Du Pont company, maker of the synthetic lacquer Duco which he so loved. He thought that the company would be flattered by his use of their material and would give him free paint. In his words:

"I believed this practice would give me unquestionable rights, so that the big paint-producing companies would hand out for free all [the paint] that I could need. I had set my sights on Dupont [sic], the giant American empire manufacturing the famous Duco. And after some days of effort, I obtained an interview with the general manager, a typical high-level Yankee industrialist bureaucrat. Once before him, I told him categorically : "I am the first artist to lay claim to the use of painting materials with a synthetic resin base. And already at

⁷⁴. The chemist was from a company identified as "Nitro Valspar Valentine" described in the memoirs as "la mejor fábrica americana de pinturas industriales a base de nitrocelulosa" (the best American manufacturer of nitrocellulose-based industrial paints). Siqueiros, 1977, p. 315.

this moment there are at least some fifty American or American-based painters who are following my example. What will happen when all the painters of the world . . . grasp the convenience of using these modern materials. . . ?" I didn't possess the least doubt that the reply to my statement, would be the following, pronounced with the greatest emotion: "Señor Siqueiros, from this moment on we offer you all the support of the powerful Dupont Company of the United States. . . all the material that is necessary for you, for your New York studio, and all other similar studios that will be founded anywhere as a result of your pioneering example, of your most valiant work." ⁷⁵

However, this was not the reaction of the "high official" of the Du Pont corporation who explained to Siqueiros instead that even if all the artists in the world all began to use painting materials in the Du Pont company's line, this would be of no commercial significance beside all of the lacquer used to coat cars, refrigerators, airplanes and other machines. Furthermore, according to Siqueiros' account, the chemical company representative expressed concern that artists might jeopardize the monopoly of the paintmaking company by learning how to make it themselves:

"you artists intentionally or not could wind up discovering our industrial secrets, and that . . . would be a sign of tremendous stupidity on our part for having allowed it: No, Señor Siqueiros, he said, not only will we not encourage artists to use our materials, we will discourage them will all the means at our disposal, and for that we will count on the great experience of our world-wide advertising department". ⁷⁶

⁷⁵. "Cuando en mi taller de Nueva York, ampliando mis práctica de Los Angeles, pude darle mucho amplitud al use de pinturas a base de resinas sintéticas, creí que esta práctica me daría indudable derecho a que las grades compañías productoras de pinturas de esa naturaleza me proporcionaran gratuitamente todas las que a mí me podían hacer falta. Para el objeto puse la mira en la Dupont, gigantesca empresa norteamericana fabricante del famoso Duco. Y después de algunos días de esfuerzo, conseguí una entrevista con el gerente general, típico alto funcionario industrial yanqui. Ya frente a él, categóricamente le dije: «Soy el primer artista pintor que reivindica el uso de materiales picóricos a base de resinas sintéticas. Y ya en estos momentos hay cuando menos unos cincuenta pintores norteamericanos, o radicados en los Estados Unidos, que están siguiendo mi ejemplo. ¿Qué será cuando todos los pintores del mundo y entre ellos los sesenta y cinco mil que viven en París, comprendan la conveniencia de usar materiales modernos, en vez de los materiales descubiertos hace miles de años, como es el caso del óleo, que aún siguen usando?» No me cabía la menor duda que la respuesta a mi discurso, pronunciado con la emoción mayor de todas las ocasiones, en mi caso, iba a ser la siguiente: «Señor Siqueiros, a partir de este momento tendrá usted todo el apoyo de la poderosa compañía Dupont de los Estados Unidos. Y ese apoyo se traducirá en que mediante simples vales usted podrá recoger de nuestras bodegas todo el material que necesite para usted, su taller de Nueva York y todos los talleres similares que se funden en cualquier parte, como resultado del ejemplo del pionero, obra valiosísima de usted». Siqueiros, 1977, pp. 314-315.

⁷⁶. "Ustedes los artistas, queriéndolo o no, acabarían por descubrir nuestros secretos industriales y eso

And according to Siqueiros, that's what they did. Siqueiros went so far as to claim that the propaganda of the chemical companies was such that

"it reached Mexico, and reached no less than my colleague Diego Rivera and his disciples, who later accused me of receiving money from Dupont for advertising synthetic colours . . ."77

Undeterred by unsatisfactory contacts with the chemical industry and occasional technical failures in his experiments with synthetic media, Siqueiros remained committed to the new materials, continued to consult paintmakers, architects, and technicians throughout his life. This practice was also adopted by other painters, especially after the war, in their search for new materials.

Overview of the Connotations of the New Media in Siqueiros' Discourse

Siqueiros' accounts depict his quest for new materials as driven by pragmatism in the beginning: they were a way of solving technical problems economically in order to achieve his aesthetic goals in specific projects. Subsequently, he claimed that the new painting media had profound repercussions for his working methods (for example, the quick drying paints required speedy application), for the formal qualities of his art (the glossy surfaces were countered through the heavy use of textured grounds, increased scale was made possible by industrial application techniques), and even for its symbolic content (emphasizing modernity and the future in place of "archaic" historical techniques).

Siqueiros' view that the modern artist must make use of contemporary means of production was grounded in an abiding faith in modern technology and in the idea of

si que sería además un crimen, una prueba, por haberlos permitido, de nuestra tremenda estupidez: No, señor Siqueiros -- me dijo--, nosotros no solamente no vamos a animar a los artistas en el uso de nuestros materiales, sino que los vamos a desanimar por todos los medios que estén a nuestro alcance y para eso contamos con la experiencia superior de nuestro universal departamento de publicidad». Siqueiros 1977, p.315

77. "Y su propaganda fue tal, que llegó hasta México y nada menos que hasta mi colega Diego Rivera y sus discípulos, quienes después de haberme acusado de recibir dinero de la Dupont para propagar los colores sintéticos . . . parece que ellos fueron los que lo recibieron, desacreditando su uso por obra de la propia Dupont." Siqueiros 1977, p. 315.

progress.⁷⁸

"We shall establish the fundamental premise that *art movements should always develop in accordance with the technical possibilities of their age.*" Modern technique and mechanics have made such enormous progress that they can enrich our creative capacity beyond our wildest imagination."⁷⁹

He insisted that artistic innovations were to be achieved by a scientific and materialist approach to painting :

"Our art must have a *real scientific basis.* We must get ride of the *empiricism*, and *emotivism* which have characterised the art movements of the world until today. For the first time in history, we shall find *scientific* truths which can be proved, either physically, chemically, or psychologically. In this way we will be able to forge a strong connection between art and science."⁸⁰

Siqueiros' revolutionary ideas about the modernization of painting practices extended to other aspects of technique such as multi-media approaches. He promoted the dissolution of boundaries between artforms:

" We must develop a *polygraphic art* which will combine both plastic and graphic art and provide a greater potential for artistic expression. Art must no longer be separated into units, either pure painting or pure sculpture, it must find a new, more powerful, more modern language which will give it much greater repercussion and validity as an art expression.

We must use *new, dialectic* forms, rather than *dead, scholarly mechanical* ones."⁸¹

For Siqueiros however, the ultimate goal of technical experimentation was to realize the emancipatory function of the aesthetic experience, as his principal biographer and a close associate in his later years explained:

"Technical innovations were of use, he said, only if applied with revolutionary proletarian conviction, at which time they would produce "transcendental aesthetic effects (social and intrinsic as in absolute works of art) that correspond to the present state of social struggle of the enraged classes, to the epoch of imperialism, last stage of capitalist rule, and to the affirmative stages of the new

78. Harten, 1995, p. 50.

79. Siqueiros 1975, p. 46

80. Siqueiros 1975, p. 46-7.

81. Siqueiros, D. A. "Towards a Transformation of the Plastic Arts" (Plans for a manifesto and study programme for studio-schools of painting and sculpture, written by Siqueiros in New York, 1934) in Siqueiros, David Alfaro (trans. Sylvia Calles). *Art and Revolution*, London: Lawrence and Wishart, 1975, p. 46

society which is very near".⁸²

The impact of Siqueiros's views on others is difficult to ascertain. Siqueiros' proselytizing did not convince everyone of the virtues of plastics and his authority with U.S. artists waned particularly as socialist discourse in the arts was subsumed by existentialist and formalist debates. Gaps in the uneasy alliance of liberals, Trotskyists and Stalinists in the "Popular Front" (an international alliance of intellectuals and revolutionaries devoted to antifascism) widened during the 1930s. Soon there was open hostility between different factions.

Siqueiros' obsessive radicalism alienated many. By the end of the decade many artists looked to Trotsky as a way to reaffirm artistic freedom and escape from Stalinist Social Realism. In this Siqueiros differed. Siqueiros remained a Stalinist politically, but he promoted an approach to art which is far removed from the rigid official Soviet art in the 1930s. This constitutes one of the nagging contradictions in his ideological analysis of "politically correct" artistic practice. Surprisingly, since he participated in an assassination attempt on Trotsky, Siqueiros' aesthetic position had much in common with that of Trotsky than Stalin whose regime he supported unwaveringly. They both promoted the use of modern materials and team work in the portrayal of active, expressive scenes showing faith in the future.⁸³

Questions were raised about his political and ethical behaviour on less dogmatic grounds as well. In the words of Octavio Paz, a younger contemporary who fought with him in the Spanish Civil war:

"He was a man of action, an adventurer, like Malraux. Like all adventurers, he was also an actor, a figure out of *commedia dell'arte*, a sort of swaggering braggart . . . capable, however, of carrying out his swashbuckling boasts. He was courageous: he took part in the Mexican Revolution and the Spanish Civil

82. Quotation from Raquel Tibol in Goldman 1995 (1977), p. 11.

83. Indeed, Siqueiros' expressionistic renderings were very far from the "socialist realism" of officially-sanctioned Stalinist interpretation of social realism, which Trotsky condemned. Trotsky, Leon. "Art and Politics". *Partisan Review, A Literary Monthly*, Volume V, No.3, August-September, 1938, pp. 3-10.

War. Nonetheless, it is impossible to forget or forgive him for, certain acts, such as the unsuccessful attempt on the lives of Trotsky and his family, which ended in the cold-blooded murder of a secretary of the revolutionary leader. That corpse casts a shadow over the memory of Siqueiros. Can a painter have bloodstained hands? . . .

We were friends in those days, but we broke with each other when Siqueiros directed the attack on Trotsky's life. . . Nor can I forget that Siqueiros was a Stalinist throughout his life: he was one of the very few who applauded the entry of Russian tanks into Prague. It would not be honest to hide the other side of the coin: he was a militant who served jail sentences and persecution for his beliefs. he was a passionate man and a narcissist; in his life and his painting, flashes of truth and flashes of stage lighting abound. . . It is impossible to ignore him."⁸⁴

Yet, Siqueiros' visits to the United States in 1932 and 1936, which were pivotal in his work with synthetic media, occurred prior to the bitter breakdown of communist-inspired artists' associations at the end of the decade, and participants in his New York and California workshops later emerged as leaders in innovative work with synthetic materials as later chapters will reveal.

Concluding Remarks

The development of materials and techniques of application to satisfy aesthetic and ideological ambitions was a salient feature artistic practice during the Mexican Renaissance. Siqueiros was not unique in seeking new materials and technical information, but he provided a particularly eloquent plea for the appropriation of modern materials -- in particular synthetic painting media -- as the embodiment of socialist principles in artistic practice. Historical accounts stress the impact of Siqueiros' technical experimentation with new media on his many students in the U.S. and his revolutionary attitudes to studio practices on the course of dominant styles of painting in international art. Significantly, the social message and ideological implications for the adoption of the new media so present in Siqueiros' discourse about synthetic media and new tools were lost in the critical reception of American painters he had taught.

⁸⁴. Paz 1993, pp. 155-157.

For many, perhaps most artists (including Siqueiros) "technique" referred to a broad range of practices and creative processes involving formal, iconographic and representational dimensions in the 1930s. Although the new synthetic media were widely adopted later, use of synthetic painting materials appears to have been relatively limited before World War II. Indeed, in the beginning, appropriation of synthetic media seems in some respects to have been almost an elite practice since the new materials appear to have been primarily used by artists who were recognized in high culture circles as we shall see. During the 1930s and early 1940s there was significant resistance on the part of other major Mexican muralists in the U.S. to wholeheartedly endorse the new synthetic media, notably on the part of Rivera and his students. Yet, in spite of doubts about the durability of modern paints, there was considerable interest in their potential for adaptation for artistic use spurred by both pragmatic and artistic concerns. From a practical point of view in the U.S. there were shortages of artists' quality materials due to a huge increase in the demand for artists' paints with the inception of large-scale government-funded projects to counter the effects of widespread economic hardship and social upheaval caused by the Great Depression. The example of the Mexican muralists and Siqueiros' advocacy of attention to modern materials and methods set the stage for art-technical experimentation in the U.S. by providing ideological and aesthetic arguments for adoption of synthetic media.

CHAPTER 3 – New Deal Art Projects: State Intervention and the Emergence of Technical Issues as a Means to Control Artistic Production

In the United States during the Great Depression, President F.D. Roosevelt's New Deal social programs included art projects administered at federal and state levels. Known collectively as the New Deal art projects, they were modeled on earlier Mexican experiences with state-funded mural decoration of public buildings as a means to communicate socio-political messages. Artist and arts administrator George Biddle, in a key document for the inception of New Deal funding of the arts, wrote in 1933 to Roosevelt suggesting this rationale for support for artists:

"The Mexican artists have produced the greatest national school of mural painting since the Italian Renaissance. [Muralist] Diego Rivera tells me that it was only possible because [Mexican President] Obregon allowed Mexican artists to work at plumbers' wages in order to express on the walls of the government buildings the social ideals of the Mexican revolution."¹

Interpretations of the New Deal vary; it is depicted at times as a revolutionary social reorganization which made a major break with the past, at times as a socially conservative vehicle for liberal reform in the service of corporate capitalism.² Whatever the broader interpretations, the impact of this infusion of attention and funds on the growth of interest in art was remarkable. State patronage produced the first major body of public American art and made art accessible to a previously uninitiated public across the country. Artists became, if only temporarily, government employees and with unions representing them a new professionalism emerged in discourse about aesthetic and technical standards. At the same time, art conservators, curators, dealers and art materials manufacturers became involved in the production and reception of the works created. The United States government became the largest consumer of art materials in the world creating a demand for quality materials which far exceeded the supply. The

¹ Biddle, George. *An American Artist's Story*. Boston: Little, Brown and Company, 1939, pp. 268-9.

² Melrose, Barbara. *Engendering Culture. Manhood and Womanhood in New Deal Public Art and Theater*. Washington: Smithsonian Institution, 1991, pp. 1-12.

search for new, more durable, cost-effective materials resulted in innovative research on synthetic media.

This section will present a summary account of the general infrastructure for the New Deal projects and some key incidents which brought art technical issues to the fore in debates between artists and bureaucrats. Technical research and experimentation related to synthetic painting media as well as the inception of coordinated efforts to regulate artists' paints will be briefly considered. These efforts illustrate ways in which the New Deal projects engendered a new intimacy between politicians, arts administrators, conservators, paintmakers and artists in the U.S. with surprising outcomes for both discourse and activities related to art materials and techniques.

Art Materials and the New Deal Art Projects

New Deal support for the arts covered a broad range of activities including the production of artworks for public buildings, travelling exhibitions, theatrical productions and films, art and craft education, and documentary projects. In the visual arts three main types of activities were undertaken: the production of works of arts and crafts, art education (including the establishment of community art centers) and research.³

Administrative Infrastructure of the Projects

The New Deal projects were administered by a plethora of organizations at various levels of government beginning in 1933.⁴ The earliest projects were begun by

³. Coordinated nation-wide research efforts in the visual arts were principally devoted to the Index of American Design, a massive study which aimed at compiling a pictorial survey of American decorative, useful and folk arts to 1890.

⁴. Woodhull, Margaret. *A Brief Guide to the New Deal and the Arts Project at the Archives of American Art*. (Finding Aid) Washington: Archives of American Art, 1990; McDonald, William Francis, *Federal Relief Administration and the Arts*, Ohio State University Press, 1969 (written in 1946); O'Connor, Francis V. *Federal Support for the Visual Arts: The New Deal and Now. A Report on the New Deal Art Projects in New York City and State with Recommendations for Present-Day Federal Support for the Visual Arts to the National Endowment for the Arts*, Washington, D.C., October, 1968. Greenwich, Conn.: New York Graphic

the Public Works of Art Project (1933-4) and the Treasury Section of Painting and Sculpture (begun in 1934 and renamed the Section of Fine Arts in 1938 and referred to as The Section). The Treasury Relief Art Project (TRAP) ran simultaneously with the projects of The Section and those administered by the Federal Art Project (F.A.P.). The F.A.P. was managed by the Federal Works Progress Administration (W.P.A., renamed Work Project Administration) until 1939. The Reorganization Act of 1939 made significant changes, notably with the inception of many state-run projects which continued some Federal Art Project activities in programs composed of a series of official state-wide project units under various administrations. The bulk of the projects supporting the arts were discontinued during the war effort although vestiges of New Deal arts programs could still be found in government at the time of writing, for example in the Fine Arts Program run by the General Services Administration (which oversees the conservation of government-owned public artworks, many of which date from the New Deal period, and runs competitions for government commissions).⁵

Although initially emphasis was placed on the decoration of public buildings, very diverse projects were developed to employ artists and craftspeople. There was some overlap in the different projects, but an effort was made to establish distinct "jurisdictions". One way this was done was to develop mandates for embellishment of different categories of buildings. For example, the program established by the Section of Painting and Sculpture of the Treasury Department (which was run on a competitive basis) was primarily devoted to producing art for *new* federal buildings, whereas the

Society, 1969; Mecklenburg, Virginia. *The Public as Patron, A History of the Treasury Department Mural Program*, College Park, Maryland, University of Maryland Art Gallery, 1979; Doss, Erica. *Benton, Pollock and the Politics of Modernism: From Regionalism to Abstract Expressionism*. Chicago: University of Chicago Press, 1991.

⁵ The current Art-in-Architecture Program run by the General Services Administration (GSA) was established in 1963 to commission works of art from living American artists. The GSA allocates a maximum of .5% of the estimated cost of constructing or purchasing new Federal buildings or of the cost of completing major repair and alteration of existing buildings. "General Services Administration Art-in-Architecture Program", in *Art-in-Architecture Artist Slide Registry Form*, Document #20405, GSA, Art-in-Architecture Program-PGA, 18th & F Streets, N.W. Room 1300, Washington, D.C. n.d. .

relatively small Treasury Relief Art Project (designed to give work to destitute artists) confined itself mainly to *old* federal buildings. The huge Federal Art Project dealt with non-federal public and quasi-public institutions (like schools and hospitals) and had many other diverse activities related to art.⁶

The most important activities for the development and use of new art materials appear to have been undertaken under the auspices of the Federal Art Project #1 which set up organizational structures by taking into account media and intended use of the art produced. Mural, easel painting, sculpture and graphic arts projects fell into the category of "creative projects".⁷ These functioned relatively separately from the so-called "service projects" which included both art education and research, as well as activities in the "allied arts" such as the Poster Project, the Photography Project, the production of dioramas and other public service-oriented activities (such as creating relief maps and models for government agencies, schools and museums). A survey of the media and techniques employed by the "creative projects" lists the following categories : mural (fresco, fresco secco, oil on canvas and oil on plaster), easel painting (oil painting on canvas or panels, tempera paintings, water colours, gouaches, pastel drawings, monotypes), graphic arts (etchings including soft-ground and aquatints, drypoints, copper engraving, mezzotints, wood engravings and woodcuts, and linoleum-cuts), and sculpture (cast and carved).

Constant efforts at administrative reorganization, decentralization and budget cuts occurred. Throughout, many of the senior administrators remained the same, although there were differences in the policies and mandates which the various projects were intended to represent. Thus there was also considerable continuity in the core

⁶. The Federal Art Project, like the Public Works of Art Project, was a primarily designed as a relief project intended to give work to needy people, and generally allowed various projects to employ a maximum of 10-25% non-relief personnel (depending on the project), although exemptions from this quota were sometimes requested in individual projects demanding particular technical expertise, notably in mural projects.

⁷. *Federal Art Project Exhibitions: Purposes, Functions, Techniques*. AAA DC50: 1183-1201.

senior administrative staff, but great variation in the artists employed at any given time, since most artists were engaged for specific art work on contracts or for limited periods.

Information about Art Materials in Records and Surviving Art

The New Deal art projects increased the demand for painting media in a variety of ways.⁸ Not only were materials required for work on the projects but the artists employed had income which they could use to buy supplies for work outside the projects. In addition new art and craft education programs for the general public expanded the number of amateurs purchasing materials.⁹

The exact nature and extent of art supply purchases for the art projects cannot be established due to the loss and disposal of many records. For example, the centralized records of purchases of supplies and equipment by the Professional and Service Projects for the Works Progress Administration (W.P.A.) art programs, which could have provided a list of suppliers, have been destroyed.¹⁰ Fortunately some papers from divisions concerned with technical issues do remain in the National Archives records on the New Deal projects but these were severely pruned by government archivists. The records they saved were selected to provide information on arts administration policies and accomplishments of interest for the insights they provide for American political history, not to document technical or substantive aspects of the art produced.¹¹ In addition oral history interviews with approximately 400 participants in

⁸. Sterner, Frank. "The Recommended Commercial Standard for Artists' Oil Paints", in Bell and Smith, 1991 (reprint of 1941 original), pp. 160-167..

⁹. WPA Technical Series, *Bibliography on Art and Art Teaching*, Art Circular No. 2, Works Progress Administration, Division of Women's and Professional Projects, Federal Art Project, Washington D.C. Document #13103 from RG. 69, Box 15 "Technical Circulars", National Archives, Washington D.C.

¹⁰. According to the finding aid for the W.P.A. "General Subject Series" documents available for consultation in the National Archives head office in Washington, D.C. Record Group 69, 210.15 "Supplies and Equipment, 1935-39" was authorized for disposal by Job No. 345-330.

¹¹. Portions of these records and some material from State archives have been microfilmed by the Archives of American Art. Much of this material was re-organized with the assistance of Frances V. O'Connor beginning in the 1960s. O'Connor, Francis V. *Federal Support for the Visual Arts: The New Deal and Now. A Research Project (Preliminary Report of Activities and Accomplishments with a Guide to New Deal Art*

New Deal art projects conducted by Dr. Harlan B. Phillips for the Archives of American Art provide valuable if sparse information on practices, since here too mainstream art historical and policy concerns were the focus of the study.

The disposal of information on art materials and techniques is not surprising given that even the artwork funded by these projects was not carefully stored. Generally the works of art created under the auspices of New Deal art projects were to remain the property of the Federal government which would then allocate them to institutions and public agencies supported in whole or in part by tax funds.¹² In fact the easel paintings in particular were widely dispersed. As early as April 1944, the government had begun liquidating its holdings and many pictures were purportedly sold to a Long Island junk dealer for 4 cents a pound. Some of the paintings ended up in the possession of a second-hand shop owner in New York City.¹³ Others were sold as rags to a plumber who thought he could use the painted canvases to wrap heating pipes.¹⁴

According to one account:

"in 1944, a man in New York taking an evening stroll with his wife began frantically rummaging through a garbage can. What he had discovered was one of the most unique art finds of our era: original works by Jackson Pollock and Mark Rothko, abstract painters regarded by many art critics as among the most innovative American talents of this century. The Pollocks and Rothkos had come from U.S. Government vaults where they had been stored since the two painters worked on Federal payrolls during the works Project Administration days of the thirties. Largely ignored, the paintings had been sold for scrap value during a renovation, and made their way to the trash pile when the contractor who bought them found the painted canvases unsuitable for pipe insulation"¹⁵

Preservation problems were not limited to easel paintings. Murals and sculptures

Project Documentation) Washington, D.C. Manuscript from Archives of American Art, dated September, 1968, n.p.

¹². *Federal Art Project Exhibitions: Purposes, Functions, Techniques*, AAA DC50: 1183-1201.

¹³. "End of WPA Art", clipping of newspaper or magazine article from unidentified publication dated 17 April 1944, p. 44 in Karel Yasko Papers, Fine Arts Division, General Services Administration.

¹⁴. Interview with Sam Golden by Jan Marontate, 1991.

¹⁵. News Release, General Services Administration, United States, Government, handwritten date : August 1970. Yasko Papers, Fine Arts Division, General Services Administration.

suffered similar abuse and neglect. Many were destroyed when ownership of federal buildings was transferred.

It wasn't until the 1970s that efforts at comprehensive inventories of New Deal art began in earnest, in particular, the National Fine Arts Inventory Project begun by the General Services Administration in 1971. This partial inventory (of surviving work still in the possession of the U.S. government) provides limited information on materials and techniques used, but only gives detailed account for works of art which have undergone conservation assessments and restoration. The inventory was conducted by a government employee named Karel Yasko who described himself as an architect by training and an architectural historian. Beginning in the early 1970s, he spearheaded a movement within the government to locate and protect New Deal art work. One of the most influential sources of information about the early history of synthetic media in American painting is a conference paper by a conservator based on discussion with Yasko and perusal of documentation in his notoriously disorderly office.¹⁶ Unfortunately, the paper does not include any bibliographic references and they are impossible to trace since few of Yasko's papers remain in the collection of the Fine Arts Division of the General Services Administration.¹⁷

Thus documentation about art materials in the New Deal is fragmentary and interspersed amongst copious administrative documents in a complex and constantly changing organizational structure. Information management efforts to reduce the volume of the New Deal archives had led to the loss of significant technical

¹⁶ The paper lists dates of introduction of materials which have been adopted in other authoritative words by conservators at the Conservation Analytical Laboratories of Museum Support Center of the Smithsonian Institution in Washington, D.C. and at the National Gallery of Canada. Points of discrepancy with Lodge's dates will be discussed in later chapters. Lodge, Robert G. "A History of Synthetic Painting Media with Special Reference to Commercial Materials", *AIC Preprints*, 1988, and Telephone Interview with Robert Lodge by Jan Marontate, October 1993.

¹⁷ After Yasko's death, his office was conserved for some time but most of his papers were apparently discarded in an effort at housekeeping. The Fine Arts Division Offices made available a small box containing mostly press clippings made by Yasko but efforts by a co-worker to salvage Yasko's papers failed. Conversation with Liza Kirwin, November 1993, Archives of American Art, Washington, D.C.

documentation as will be evident in later discussions. Nonetheless, the surviving documents provide some fascinating insights into ways in which art materials came to the fore in disputes between artists and administrators.

Access to Materials: Purchasing Arrangements and the Quality of Art Supplies

Arrangements varied regarding the procurement of art supplies for use in the projects and who would pay for them. In some New Deal-sponsored programs, for example those run by the Treasury Section of Fine Arts to commission art for post offices and courthouses, small contracts often stipulated that artists purchase their own supplies.¹⁸ For many of the projects local sponsors were expected to supply funding for materials or at least to assume the cost of materials which "ordinarily made necessary the securing of a great deal of preliminary public interest".¹⁹ Often art materials suppliers were accorded contracts directly by government agencies which then dispersed the materials to artists.²⁰ In these cases strict guidelines had to be followed but these guidelines had not been developed with artists' materials in mind.

The procurement of art supplies in sufficient quantity, of adequate quality and at reasonable costs was problematic. In many instances the purchasing process was blamed for difficulties with the quality of art supplies. According to Rutherford J. Gettens (whose work testing materials for the project will be discussed below)

commenting on problems after the states took over management of the W.P.A. projects: "Purchasing was done by the state offices through the Procurement Division of the United States Government. The [art project] supervisors naturally wanted to supply the artists with first-grade materials, but purchasing agents knew very little about artists' materials and hence could not buy them critically. Confusion

¹⁸ Melrose, 1992, p.5.

¹⁹ *Government Aid during the Depression to Professional, Technical and Other Service Workers*, Works Progress Administration. A report prepared by the Division of Professional and Service Projects and submitted to James T. Shotwell, Chairman of the American National Committee on Intellectual Cooperation of the League of Nations by Harry L. Hopkins of the WPA, May 18, 1938. Archives of American Art. reel DC-56, p. 23.

²⁰ McDonald, 1969, pp. 377-422.

of trade names, lack of any kind of standard of quality, lack of uniformity in packaging all made purchasing a most haphazard procedure. . .

Artists themselves were untaught in these matters and had no strong convictions about quality and sources of materials, or if they did their opinions differed widely. They would frequently ask for paints having most fugitive and undesirable pigments.

The difficulties of purchase were greatly increased when the state projects received orders to buy artists' supplies on the basis of sealed bids from the lowest bidder. The purchasing agent could no longer place his order with an established and reputable house. It was found that the materials supplied on low bids were cheap substitutes that masqueraded under names ordinarily used for better grade paints. This resulted in complaints from artists and grief for the purchasing agent."²¹

Customary procedures for purchasing supplies which relied on a system of competitive bids based on specifications were hard to implement due to the difficulty of writing specifications for art materials "because of their complicated composition, their specialized use and their ease of sophistication [sic]".²² Generally, government regulations regarding supplies required special permission for ordering products using proprietary names. Records indicate that only three brands of artists' paints could be ordered by their proprietary names.²³ The administration's general policy was to give American suppliers priority which was another source of complaints since many of the better quality artists' paints used by American artists at the time were made in Europe.²⁴

Debates about Artistic Competence: The Issue of Style vs. Technique

Complaints about the quality of materials and techniques used in the projects

²¹ Gettens, Rutherford J. "The Materials of Art", *Art for the Millions: Essays from the 1930s by Artists and Administrators of the WPA Federal Art Project*, (ed. Francis V. O'Connor), New York Graphic Society, Ltd. Greenwich, Connecticut, 1973, pp. 190-191.

²² WPA. AAA DC79:1710

²³ A list of "domestic materials requisitioned proprietary" without further identification indicates that Schmincke, Weber and Martini were the only authorized brand names of artists' paints which could be ordered by their proprietary names. Sherwin & Williams paints and lacquers were the only ones were allowed to be purchased by name for silk screen work. Since these are listed as "domestic materials" it must be assumed that the Schmincke colors were those made by Grumbacher through special arrangement with the German-based company during the 1930s (see Chapter 7). Record Group 69. Records of the W.P.A. Office of the National Director. General Records. 1935-1940. National Procurement Folder, n.d. Box 11, entry 540, National Archives, Washington D.C.

²⁴ Letter from Olin Dows to Umberto Romano dated March 13, 1936. AAA DC57: 1068

abound in documentation and these are interwoven with general concerns about artistic standards in the projects.

Many studies have documented the frequently hostile reception accorded New Deal-sponsored artworks.²⁵ Criticism of content and style was particularly common in public assessments of large-scale works of art done for public buildings across the country.²⁶ For artists and other participants in art worlds (critics, curators, gallery owners etc.), aesthetic and socio-political issues were at the core of the debate about standards. In particular, tensions were apparent in relations between social realists, regional populists and practitioners of various forms of abstract or "modern" painting as the new abstracting tendencies were sometimes called. Painters working in non-representational styles complained about discrimination in hiring and mounted a successful campaign near the end of the program to redress past wrongs with a travelling exhibition of abstract easel paintings.

Indeed there were federal restrictions affecting style and content. Administrators felt these restrictions were minimal and often displayed a profound ignorance of then-current art trends. This is illustrated well in one report proudly boasting of the freedom given artists which shows a complete unawareness of abstraction in painting:

"The only federal restriction was that the subject matter of these art works should be American, whether naturalistic, symbolic, legendary or historical".²⁷

Even as early as 1936, in the Treasury Relief Art Project there was friction

²⁵ Marling, Karel Ann *Wall-to-Wall American: A Cultural History of Post Office Murals in the Great Depression*, Minneapolis: University of Minnesota Press, 1982.

²⁶ See for example, Marling 1982 and Doss 1991.

²⁷ *Government Aid during the Depression to Professional, Technical and Other Service Workers*, Works Progress Administration. A report prepared by the Division of Professional and Service Projects and submitted to James T. Shotwell, Chairman of the American National Committee on Intellectual Cooperation of the League of Nations by Harry L. Hopkins of the WPA, May 18, 1938. Archives of American Art, reel DC-56, p. 23.

between artists and administrators over the issue of whether abstract tendencies would be accepted. Throughout the history of the New Deal projects protests by artists against discrimination on stylistic grounds were frequent. In discussions about such issues, unions and other artists' representation organizations played an active role. Some of these were local organizations, while others, such as the American Artists Congress, had a national membership.

In 1936 one of these artists' organizations, the Artists Union and Craft Locals, protested "any decision to limit the freedom of expression accorded to artists on the project" and the "apparent discrimination against a school of painting" focussing on several specific cases involving dismissals.²⁸ In one case an artist had been fired because his work was found "unacceptable on the grounds that it was "abstract" painting."²⁹ The director of the project had written to the artist stating that:

"Abstractions are impossible for us to use under this Project. I would suggest that you do no more abstractions like the one you sent in."³⁰

A union representative sought to explain to project administrators the distinction between technical competence and "style":

"When an artist is accepted on the project, he undertakes to deliver competent work, but does not undertake to deliver work which is in accordance with academic, or any other specific theory of art. . . Abstract painting is in accordance with a theory of art which is accepted by many artists and many critics. It is obvious that if a painter who works in the "abstract" manner is forced to deliver realistic work, he cannot do justice to himself or reflect credit upon the project. Under such conditions, we feel that the project would not be fostering the free development of art, but would be enforcing the delivery of

²⁸. Letters from the Artists Union Protest Committee (Lawrence L. Steinfeld, Susan Mandl, Louis Lozowick, Saul Berman and Alex Dobkin) to Olin Dows, n.d. and from the Grievance Committee (New York) Grievance Committee (W. Walkeley, Schlemowitz, Borned, Pandolfini and Mandl), October, 30, 1936. AAA reel DC32.

²⁹. The artist in question was Igor Pandukoff. Letter from Harry Malinow, Chairman of the T.R.A.P. Artists Union and Craft Locals (New York, N.Y.), to Olin Dows, Director, Treasury Relief Art Project, October 12, 1936. Records of the Treasury Relief Art Project, AAA reel DC32.

³⁰. Letter from Olin Dows to the Artists' Coordination Committee, New York, September, 1936. AAA Reel 32.

much worthless and "hack" production".³¹

But later, after protests by New York artists in particular the project director reformulated his statement:

"The use of "impossible" is an overstatement on my part. The Project has difficulty in allocating abstract paintings and, although we have accepted a number, individual painters have been asked (when they work in both *methods*) to submit their more objective work."³² [Emphasis added].

Here the notion of "method" or technique is once more introduced by an administrator into a dispute about aesthetics (denoted by the administrator in his letter as "style" or "school of painting").

Public Accountability, Hiring Practices and Artists' Qualifications

For politicians and bureaucrats, questions about standards raised by voters were a reminder that New Deal art projects used public funds. When art produced for the projects met with public disapproval as it frequently did, accusations of poor standards and technical incompetence were not uncommon. These in turn brought publicized outcry about squandering government funds and suspicions of unfair hiring practices.³³ Many members of the public reasoned that a "qualified" artist would produce acceptable art.

Strict guidelines were developed to enforce fair hiring practices of "qualified" artists and to avoid favoritism. Artists had to satisfy various criteria for eligibility on the projects. Most of the projects were relief projects, put in place to help qualified needy workers earn enough to live, although some awarded commissions solely on the basis of anonymous competitions. In theory, relief art

³¹. Malinow to Dows, *op cit*.

³². Letter from Olin Dows to the Artists' Coordination Committee, November 6, 1936. AAA Reel 32.

³³. Complaints about hiring practices on the basis of political affiliation also made reference to technical qualifications. See, for example complaints that jobs in the art, music, theater and writers projects were strongly linked to membership in the Communist Party and socialist workers' alliances. Letters from the Executive Council of the National Civic Federation to President F.D. Roosevelt, July 7 and 16, 1937. Archives of American Art, Reel #DC89-722.

projects were to be run in precisely the same manner as New Deal projects in other fields, notably by hiring needy workers according to their qualifications. (A quota system which allowed for the hiring of some non-relief employees meant that established artists who were not destitute could be engaged to assume artistic leadership in some projects.)

Efforts were made to establish hiring procedures which would be politically defensible by developing a classification system for artists according to their technical skill. For example, the Federal Art Project established four categories for the skill classification of non-supervisory personnel. They were as follows:

- professional and technical*; this included experienced artists "capable of producing creative work of a high standard of excellence" rated as professional,
- skilled*; artists "able to produce work of recognized merit, but not of a quality equivalent to that of the above classification" and "who are qualified by training and experience to take part in any of the various activities of the Federal Art Project, under supervision";
- *intermediate*; a group of less skilled and experienced artists, craftsman and apprentices who need supervision and guidance
- unskilled*; "personnel such as gallery attendants, handymen, messengers and office boys"³⁴.

Assessment of professional ability was based on information furnished by the artists and on samples of work submitted to administrators. A questionnaire on the artist's personal situation (including questions regarding marital status and dependents) also covered details about general education, art training, exhibition records and collections in which the artist's work was to be found. Detailed information about "experience in various media and techniques" was also collected.

It should be noted that women were hired, although the wording of this description of qualifications might appear from today's perspective to presume that artists would be male. Some historians have portrayed the New Deal as a turning point for female artists claiming "the arts projects were, by and large, immune as institutions

³⁴. *Federal Art Project Manual*, October 1935, document #7120, in Records of the W.P.A. Record Group 69, AAA reel DC57, pp. 4-8.

to the poison of sexual discrimination".³⁵ By employing women artists New Deal art projects appear to have sanctioned the gains of a century of women's struggles for access to training, and for professional recognition.³⁶ However, fragmentary statistical data suggest that women were less successful even in anonymous juried competitions and that they were given less lucrative and less prestigious commissions.³⁷

The classification system of artists superficially provided assurances of equitable hiring practices, but judging artistic qualifications was a thorny issue. Artists are a notoriously difficult occupational group to identify, in part due to the fact that only a small percentage of people who create art actually wind up making a living from their art.³⁸ Furthermore there was no single system of accreditation which would allow officials to identify qualified individual artists and rank them.

Artists' Unions and Administrative Blunders: Political Freedom, Aesthetics and Technique

In some states artists' organizations became powerful authorities, providing letters of accreditation for artists and acting as representatives in the adjudication of disputes over artistic qualifications.³⁹ Lively and at times acrimonious debates

³⁵ Melrose, 1992, p. 221. For a lively discussion of the place of women artists and the data available on participation in the New Deal generally and in the Section specifically see "Women Artists and the Section: The Limits of Pluralism", pp. 220-228.

³⁶ Marling, Karal Ann. "American Art and the American Woman", in Marling, K.A. and Helen A. Harrison (ed.), *American Women: The Depression Decade*. Poughkeepsie: AIR Gallery, 1976, p. 14.

³⁷ Around 19% of the 852 artists commissioned by the Section were women, however they generally received smaller commissions. In a 1935 study cited by Marling 41% of artists on relief in New York were women but in 1936 the New York City Federal Art Project women represented 23% of artists employed. Women were more likely to be hired as art instructors than they were to be engaged to create art. The figures are difficult to evaluate since there is no comprehensive survey of women artists in America during the thirties. Melrose 1992, p. 220-228.

³⁸ See on this subject: Moulin, Raymonde avec Pascaline Costa. *L'artiste, l'institution et le marché*, Paris, Flammarion (Série "Art, Histoire, Société"), 1992; Freidson, Eliot, "Les professions artistiques comme défi à l'analyse sociologique", *Revue française de sociologie* 27 (1986), pp. 431-444; and Couture, Francine. "La professionnalisation de l'art", in (dir. E. Wallon) *L'artiste, le prince. Pouvoirs publics et création*, Grenoble et Québec/ Presses universitaires de Grenoble et Musée de la civilisation du Québec, 1991, pp. 123-131; Singly, François de, "Artistes en vue", *Revue française de sociologie* 27, 1986, pp. 531-544; and Menger, Pierre-Michel, "Rationalité et incertitude de la vie d'artiste", *Année Sociologique* 39, 1989, pp. 111-151.

³⁹ For a thought-provoking discussion of the social politics of American artists organizations during the

about aesthetics and the social role of the artist led to dissension in many artists' organizations during this highly politicized period of American intellectual and artistic life, but not when it came to budget cuts and firings. According to painter Len Bocour, who at the time of the New Deal was also an aspiring artist, there was a consensus about the need for funding. He recalled:

"See in those days, during the project period you couldn't get three artists to form an organization based on aesthetics, but you could get a thousand of them based on economics . . .

But you know, that was a period that was all . . . communal work and communal projects. We would all get to paint . . .

You mustn't take it out of context. . . in the '30s we were in a big depression here and, you know, capitalism seemed to be falling apart and everybody was looking for a new solution and the art reflects the period. . .

They had a WPA show recently here . . and it was all evictions, cops hitting strikers on the head with clubs . . ."40

The power of artists' groups varied. In the northern New England states organized labor insisted on strict requirements for certification of artists. The New England regional director blamed the union for making it necessary to hire artists of dubious competence.⁴¹

The case of Frank Sterner, who was State Director of the Works Progress Administration projects for Massachusetts, provides an interesting example of the evolution of concerns about technique and materials during this period. Sterner became embroiled in a dispute over public remarks he made about the alleged incompetence of one of the artists working on the Easel Project. The artist in question was James Pfeufer, the executive secretary of the Artists Union of

period of the "de-Marxization of the American intelligentsia" see Guilbaut, Serge. (Arthur Goldhammer, trans.) *How New York Stole the Idea of Modern Art. Abstract Expressionism, Freedom and the Cold War*, University of Chicago Press, Chicago, 1983, especially Chapter One "New York 1935-1941: The De-Marxization of the Intelligentsia", pp. 17-48.

⁴⁰ Len Bocour Interview, Morris Louis Estate Papers, Archives of American Art, Washington, D.C. unpublished transcript done by Withers Reporting Service, February 10, 1979 p.25 and 46

⁴¹ The director was Richard C. Morrison. "Conference of Regional Directors of Federal Art Project", Thursday September 17, 1936, Willard Hotel, Washington, D.C., Archives of American Art, reel DC56: 955-1120.

Massachusetts.

Pfeufer's name is not important, but the outcome of his case had a direct impact on research into art materials which outlasted the New Deal projects. Pfeufer had been dismissed from the Art Project in Boston in 1936 "on the grounds of incompetence and lack of professional standing".⁴² The project administrator, Sterner, had been quoted in the press as not only criticizing Pfeufer's work but also making negative comments about the Artists' Union apparently stating that there were: "one hundred members in Artists' Union but five are artists."⁴³

The American Artists Congress led by Stuart Davis and other prominent artists demanded the reinstatement of Pfeufer as a class A (professional) artist claiming his dismissal had been "based on considerations which are beyond the power of the project authorities, namely, arbitrary esthetic judgements".⁴⁴ The case was brought before the Labor Relations Board of the W.P.A. in Boston and in Washington which ruled in favor of re-instating Pfeufer as an artist in the project in spite of not having seen the work.⁴⁵ However, the Massachusetts administrators countered by consulting "twenty-five art men who had been promised not to have their names divulged so that they would not be bombarded in just [such] a matter".⁴⁶

⁴² Transcription of a letter from the Artists Union of Massachusetts to Holger Cahill, April 22, 1936. Federal Art Project, Record Group 69, "Regional and State Correspondence File, Massachusetts, Jun-August, 1936", AAA reel 61: c. 780.

⁴³ Telegram with quote from unidentified press articles sent by Artists Union of Massachusetts to Holger Cahill, April 22, 1936, *ibid.*

⁴⁴ Letter from Stuart Davis, National Executive Secretary of the Artists' Congress to Holger Cahill, May 26, 1936. Federal Art Project, Record Group 69, "Regional and State Correspondence File, Massachusetts, Jun-August, 1936", AAA reel 61: c. 800.

⁴⁵ See correspondence between Holger Cahill (Federal Art Project), Richard C. Morrison (Regional Director of Art in New England) and Francis Henry Taylor, Chairman of the Worcester Art Museum. Federal Art Project, Record Group 69, "Regional and State Correspondence File, Massachusetts, Jun-August, 1936", AAA reel 61: 551-811.

⁴⁶ The group included Francis Henry Taylor, chairman of the board of the Worcester Art Museum and Charles Sawyer of the Addison Gallery at Andover. Memorandum to R.C. Branion and Bruce McClure from Rebecca Hourwich Reyher re: "Report in regard to the Artists Union Protest in Massachusetts", May 8, 1936. Federal Art Project, Record Group 69, "Regional and State Correspondence File, Massachusetts, Jun-August, 1936", AAA reel 61: c. 790.

The consultants were adamant in their rejection of Pfeufer's work and wrote a conspiratorial letter to the head of the American Artists' Congress, assuring him that he too would have found the work indefensible had he been able to see it.⁴⁷ Pfeufer was reinstated by the board. Although the project administrators did not oppose the board's decision they maintained

"we shall not, however, alter our opinion in regard to Mr. Pfeufer's competence as an artist. It is unfortunate that the political and social issues aroused by this incident have obscured the art problems involved."⁴⁸

The nationally-publicized dispute raised questions about the role of organized labour in New Deal projects and about how the "art value of the product" could be distinguished from labour relations and policy issues. The state-based Artists Union had claimed that "before anyone could join their union they passed upon their qualifications, and therefore membership in the union indicated ability; consequently the dismissal of any union member was an attack on the union".⁴⁹ Furthermore the Artists' Congress supported the union nationally maintaining that this matter "established a precedent against freedom of expression of the Art project".⁵⁰

Here two issues, aesthetic freedom (of professional artists) and political freedom (expressed in the form of organized unions) became intertwined. Spirits were running high. Trotskyists and Stalinists debated different approaches to the role of art and artists as anti-Communists began to complain about the domination of art projects by socialists.

Organized labour won the battle for the reinstatement of Pfeufer but this

⁴⁷. Letter from Francis Henry Taylor to Stuart Davis, June 16, 1936. AAA reel 61:678.

⁴⁸. Letter from Francis Henry Taylor of the Worcester Art Museum to Holger Cahill, June 16, 1936. AAA reel 61: 0676.

⁴⁹. Memorandum to R.C. Branion and Bruce McClure from Rebecca Hourwich Reyher re: "Report in regard to the Artists Union Protest in Massachusetts", May 8, 1936. Federal Art Project, Record Group 69, "Regional and State Correspondence File, Massachusetts, June-August, 1936", AAA reel 61: c. 790.

⁵⁰. Letter from Stuart Davis to Holger Cahill, June 12, 1936. Record Group 69, Records of the Work Projects Administration, Central Correspondence Files 1932-44, Massachusetts, 651.315 Art Program, 1935-1941.

brought national attention to the potential power of artists' unions and appears to have inadvertently weakened the role of unions in the context of the New Deal art projects by producing a political backlash. Up until this point administrators had relied on union accreditation as a way of simplifying hiring. Reactions by F.A.P. administrators to the controversy over the union's widely-publicized involvement in the Pfeufer case were swift. Memoranda from the Washington office emphasized that union membership was not obligatory and coercion of employees to join any "political organization" would be sufficient cause for immediate dismissal, although employees were free to join organizations.

The idea of establishing standards through careful selection of artists according to qualifications was de-emphasized in administrative discourse thereafter.

Scientific Research on Art Materials and Techniques as a Solution to Problems of Administrative Control

Questions remained as to how exactly to define and develop "standards" for New Deal-sponsored art. "Scientific" research on materials and techniques for enduring art offered hope to bureaucrats and art administrators of providing a basis to establish authority and control over artistic production. Rather than engage in prolonged arguments about aesthetics, taste and favoritism in hiring practices, some project administrators tried to exercise control by focussing on more concrete issues such as deficiencies in the art supplies themselves or specific technical problems which might affect the longevity of the art produced in their projects.

The specific events in Boston illustrate this trend clearly. Continued tensions between art project administrators and artists led to the transfer of Frank Sterner, (the administrator whose comments had aggravated the union). He was appointed to the National Co-ordinating Project for Art in Massachusetts in July, 1936, where he was to devote his attentions to unspecified technical matters. Sterner had

studied in the Department of Fine Arts at Yale and had done graduate work and taught "Methods and Processes in Painting" at the Fogg Art Museum, at Harvard University.⁵¹ During the 1930s the Fogg was a leading international center for art conservation research.⁵² Sterner apparently spent the following months drawing up a project for investigation into the quality of artists' supplies in consultation with Rutherford J. Gettens, then head of the Chemical Research Department at the Fogg Museum. Sterner's superior couched the proposal as follows:

"Unending delays in obtaining artists' materials from the Procurement Division made me wonder if this slowness was not caused by Procurement purchasing officers untrained in this field. Careful investigation revealed that not only were the Procurement people ignorant of the quality of artists' supplies but that the artists and we ourselves knew very little about them. Inquiry into the Bureau of Standards and every other agency where such information should be available brought us no additional knowledge. Convinced finally that some standard must be set; I instructed Mr. Sterner to launch a project to find out the information we need."⁵³

By April of 1937, the State Co-ordinating Unit (as it was then known) received permission to engage Gettens as a part-time Consultant Chemist.⁵⁴ Out of this collaboration grew two major projects concerned with standards of art materials: the Boston Paint Testing and Research Laboratory which functioned from 1937 until 1942 and the Recommended Commercial Standard for Artist's Oil Paints.

Before discussing these projects it should be noted that concerns about the quality of art materials were also being expressed by artists.

⁵¹ Letter from Richard C. Morrison to Arthur G. Rotch, Administrator, W.P.A. Boston, December 16, 1936. AAA, DC 79:1411.

⁵² See Chapter 6.

⁵³ Letter from R. Morrison to Colonel McDonough, Administrator Works Progress Administration, April 7, 1937. AAA DC79:1708.

⁵⁴ Letter to John J. McDonough from Ellen S. Woodward. AAA.. DC79: 1706.

Artists' Dissatisfaction with the Quality of Materials and the Demand for Research

Elsewhere discourse on dissatisfaction with specific projects also eventually focussed on criticism of materials and techniques. For example, in late 1939 and early 1940, an inquiry was conducted by the American Artists' Congress into possible mismanagement of the Southern California art project.⁵⁵ In this case it was artists' representatives who expressed complaints. In particular the mural unit was criticized for failing to ensure that work was executed with materials of sufficient quality to ensure its durability and permanence:

"As a means to cut production costs, the project is now manufacturing its own pigment and preparing canvas used for murals, etc. This might be a commendable undertaking if these materials were equal in quality to tested commercial products. However, since the manufacturing of permanent pigments requires the research of experienced chemists, and protracted periods of experiments, etc., it is open to serious doubt whether the materials now in use will withstand the action of light and foreign matter to which they will be subjected."⁵⁶

Interestingly here it is an artists' union rather than an arts administrator bringing forth arguments for judging art on the basis of materials and techniques.

Thus both artists and administrators appeared to accept the principle of the enforcement of standards regarding the quality of materials.

Research Laboratories and Technical Units

Numerous technical units were eventually put in place to provide some technical support for various projects. Advice was available from the Washington office of the WPA and technical laboratories or committees in some of the larger states and regions.⁵⁷ New York City and Massachusetts had the most prominent technical units

⁵⁵ See in particular, the letter from Edward Biberman, member of the executive committee in Los Angeles to Holger Cahill, June 6 1940 transmitting the report. Record Group 69, Works Progress Administration, Central Files : State (1935-1944), California 651.315, box No. 0943, National Archives, Washington, D.C.

⁵⁶ "Report on Southern California Art Project: Report of the Special Investigating Committee" compiled by the Los Angeles Branch of the American Artists' Congress and submitted to Holger Cahill, Director of the Project by Edward Biberman of the Executive Committee with a letter dated June 6, 1940.

⁵⁷ These were in Massachusetts, New York City, Illinois, Florida, Ohio, Michigan, Iowa, New Jersey,

serving fine arts. By 1940 projects had also been set up in Illinois, Florida, Ohio, Michigan, Iowa, New Jersey and Wisconsin and were planned in North Carolina, Missouri and Oregon, primarily to advise crafts projects.⁵⁸ In addition to developing tests for adulteration and durability of a wide range of materials, some of these units set out guidelines for techniques and worked on the development of synthetic media applications for various projects.

Several centers appear to have been involved with investigations of synthetic painting media: the Washington Technical Services Laboratory, the New York City facilities, the Boston Paint Testing and Research Laboratory and the Southern California art project. An examination of remaining documentation reveals how heavily the burden of bureaucracy and administration weighed on these technical units.

The Technical Services Laboratory: Criteria for Establishing Standards in Art Materials⁵⁹

A "special skills" division was established in Washington to deal with practical questions confronting artists and craftsmen.⁶⁰ This became the Handicraft Laboratory in Washington, D.C. and was renamed the Technical Services Laboratory in 1938.⁶¹ It was disbanded in 1939.

The laboratory conducted tests of materials and fielded technical questions from projects nationwide with the goal of improving standards and responding to requests for technical information from varied craft activities. The unit developed an approach

Southern California and Wisconsin ["Report on the Accomplishments of the WPA Art Program, June 30, 1939- June 12, 1940", submitted to Mr. C.G. Triggs by Holger Cahill, June 18, 1940. Records of the WPA, Record Group 69, WPA General Subject Series, 211.53 , AAA DC50].

⁵⁸. Interestingly many of the crafts projects appear to have been efforts to stimulate artisanal production of items for daily use, like furniture and woven fabric.

⁵⁹. See for example *Prospectus of the Technical Services Laboratory* (October 1, 1938- April 1, 1939. Record Group 69, W.P.A., Central Files: General, 1935-1944, 237.4 Oct.-Dec. 1938, Box No. 0630.

⁶⁰. It was probably in existence by 1936 although the exact date is unclear. McDonald 1969, p. 459.

⁶¹. It was headed by Adrian Dornbush. "Memorandum from Harry L. Kinnear to Supervisors of Chief Clerk's Office, November 8, 1930. Records of the WPA, Record Group 69, Central Files, General 1935-1944, 237.4, AAA, Box no. 0630.

which transcended the purely mechanical application of scientific method to the arts. In its definition of what constituted "standards", the laboratory specifically tried to take the experience of the artist (or artisan) and of the user (or viewer) of the product into account. Standards were defined by the unit as:

"the interplay of all the innumerable factors and influences that condition the making of anything: the materials, the tools and the skill of the craftsman; the needs that supplied the impulse to produce, and the degree of satisfaction of those needs expressed in the use of a product when made. Thus the development of standards must be a natural process of redefinition and growth . . . And the word "standards" should not in any way imply an effort to "standardize", in the sense of regimenting production or performance according to fixed principles."⁶²

This definition which dates from 1939, firmly ensconces "standards" for materials and techniques as part of a forward-looking creative process in tune with the artisan and the intended audience. The statement provides an almost uncanny anticipation of theories of reception (in which the receptor is part of the creative process) which emerged forty years later. Interestingly, the statement explicitly denounces the use of "standards" as a constraint or means of controlling the freedom of the creator.

One the targeted areas of study was plastics. The plastics research was begun primarily to seek durable, lightweight and inexpensive materials for Museum Extension projects, (that is, for travelling exhibits). Part of its job was to study the adaptability of different plastics to artistic uses, including use in paints.⁶³ The plan was to consult creators (craftspeople and artists) as well as commercial plastics manufacturers and researchers.⁶⁴

⁶². Adrian Dornbush, director, Technical Services Laboratory, "Introduction", *Prospectus of the Technical Services Laboratory* (October 1, 1938- April 1, 1939. Record Group 69, W.P.A., Central Files: General, 1935-1944, 237.4 Oct.-Dec. 1938, Box No. 0630, p. 4.

⁶³. *Technical Services Laboratory Research Problem for Women's and Professional Division: Plastic materials for Museum Extension Projects*, Records of the WPA, RG 69, 237.4 AAA, National Archives, Washington, D.C

⁶⁴. Dornbush also undertook consultations with government representatives working in the area of plastics, notably at the National Bureau of Standards and in the Department of Agriculture. They were, in the National

The planned research on plastics at the laboratory was hampered by lack of appropriate equipment and difficulties obtaining materials. The Laboratory tried to obtain technical information and samples of plastics from major chemical manufacturers like Rohm and Haas, Union Carbide and Du Pont, but the manufacturers were, of course, interested in *selling* their products, not giving them away.⁶⁵ However U.S. government purchasing regulations prohibited ordering specific brands. The head wrote to a superior explaining how purchasing regulations were impeding research on synthetic media:

"At present it is necessary that any item not appearing on Government schedule be purchased through competitive bidding regardless of its cost. In this way the specific articles needed for experimental work are often impossible to obtain. When an item bearing the same general title as a specified item is found on Government schedule, it is impossible to get the specified item, regardless of basic differences which may exist between it and the item on schedule."⁶⁶

Bureaucratic procedures appear in this case to have stymied progress.

Another function of the Laboratory was to review all technical instruction bulletins prepared or planned by state programs. The correspondence of Adrian Dornbush indicates that many technical publications were received by the lab and reviewed, for example in one month alone a report states that 47 technical bulletins sent by the Education Division were reviewed, yet *not one* of these or other technical bulletins mentioned in the correspondence has been found in the archives of the Laboratory.⁶⁷

Bureau of Standards (Mr. Wells, Plaster Section, Mr. Kline, of the Division of Organic Plastics) and the U.S. Department of Agriculture (Dr. Knight, Bureau of Chemistry and Soils and Dr. O.E. Reed, Dairy Bureau). Dornbush made arrangements to use a laboratory in the Organic Plastics Section of the National Bureau of Standards to conduct research on plastics.

⁶⁵ He wrote for information on "Plexiglass" (made by Rohm and Haas), "Plasucel" and various synthetic wetting agents like "Gardinol" which was also known as "Duponol" (made by I. Du Pont de Nemours and Company).

⁶⁶ "Memorandum" from Adrian J. Dornbush to Margaret Stephenson, April 3, 1939, Records of the WPA, RG 69, 237.4 AAA.

⁶⁷ *Progress Report: Technical Services Laboratory*, Records of the WPA, RG 69, 237.4 AAA, National Archives, Washington, D.C.

The New York City Technical Units and Experimentation with Synthetic Media

In New York City two main units were concerned with technical issues and both of them were actively engaged in working with synthetic media. This is not surprising given the large art community in the city which was quite receptive to the idea of exploring new painting materials, according to Siqueiros' accounts of his 1936 Experimental Workshop there.

The Design Laboratory was a school set up in 1935 for instruction in design technique and experimental studies in crafts production.⁶⁸ The curriculum focussed on industrial design issues for mass production instead of a hand-craft economy. The curriculum was unorthodox, combining instruction in elementary physics and mechanics, and in drafting and rendering with lectures in social science, basic notions of merchandising and visits to factories in the New York area to study manufacturing conditions. Students at the Design Laboratory experimented with a wide range of synthetic materials but no clear connections have been found with fine arts applications.

At the same time a technical unit had been set up to assist in various art projects such as preparing panels and walls for murals, restoring works of art for sponsors, managing supplies, framing, and doing chemical analyses. By the end of the decade the unit was known as the Restoration, Installation and Technical Service Division and headed by Raphael Doktor.⁶⁹ The unit actively engaged in the search for new media. In addition to working on simple tests for artists' colours and canvases the unit also

⁶⁸. It operated as a free school open for students unable to pay tuition and after the withdrawal of federal support in 1937 continued as an independent venture under the auspices of the Federation of Architects, Engineers, Chemists and Technicians for a few years. Gilbert Rohde and Josiah P. Marvel were directors of the Design Laboratory School in 1936. McDonald *ibid.* pp. 461-2. Rohde, Gilbert. "The Design Laboratory", *The American Magazine of Art*, Vol. 29, 1936 p. 638-643, 686.

⁶⁹. Doktor was born in Massachusetts and raised in Indiana. He attended the Art Institute in Chicago and the Corcoran School of Art in Washington and participated in the New York Art Students League. He studied under the painter Leon Kroll. See in particular "Northern Indiana Artists to have Exhibit in Club", *The South Bend Tribune*, Tuesday Evening, July 14, 1942, p. 6. Doktor Papers, AAA.

developed new synthetic painting materials notably a casein gesso and a product called "Glyptal Resin Emulsion." Both were water-borne synthetic materials which had been developed in a search for new media for mural painting.⁷⁰ Somewhat like the water-borne acrylics which were to appear 15 years later, the Glyptal painting medium could be thinned with the addition of water to a glazing consistency, yet when dry it formed a water-proof coating.

Technical bulletins and short papers were written on other materials and techniques by staff at the New York City W.P.A. Federal Art Project, notably on the silk screen process, on plastic magnesium cement and on different artists pigments.⁷¹ The unit also apparently put out a textbook on various media and materials for use by artists.⁷² The formulas developed by the unit were probably tried in art projects. For example, it is possible that the Glyptal formula publicized by Doktor's technical unit was used by James Brooks for the mural *Leonardo da Vinci: Flight* (1938-1941, now destroyed).⁷³ However a conservator has speculated that the use of this particular synthetic painting medium (Glyptal) in New Deal art originated through the work of the Boston Paint Testing and Research Laboratory.⁷⁴

Information about research done on materials by the unit was disseminated to interested artists beyond the confines of the F.A.P.. The head of the technical division

⁷⁰ One of the components of this synthetic emulsion was Glyptal which was based on a synthetic resin of the glycerine phthalic acid type commonly known as alkyd resin produced by General Electric Company. Formula for "Glyptal Resin Emulsion". Doktor Papers. AAA.

⁷¹ "Plastic Magnesium Cement" is defined as a chemical compound formed as a results of interaction of calcined magnesite and magnesium chloride of high concentration. It has also been called artificial stone, oxychloride cement, Sorel cement, etc.". Because of "its strength plasticity (it can be stuck with a hammer without breaking), its work and "feel", it was seen as a good material for flooring but also for modeling, casting, tile and mosaic. An unpublished typed copy of Gutoff's manuscript can be found in the Raphael Doktor Papers. See also Doktor, Raphael. *Technical Problems of the Artist: Canvas Adhesives*, Federal Art Project, Works Progress Administration, n.d.(c. 1939)

⁷² Transcript of tape recorded interview with Michael Lenson by Harlan Phillips, Nutley, New Jersey, October 30, 1964. AAA.

⁷³ Art conservator Alan Farancz has apparently documented the use of Glyptal in this case as well as in the case of a work by the artist Cy Fogel although this has been disputed. Lodge 1988, p. 121.

⁷⁴ Lodge 1988, 121.

gave public lectures on techniques and materials in New York City.⁷⁵ He also participated with an art conservator in a radio broadcast on the technical problems of the artist.

Another research effort on synthetic painting media for art associated with New Deal was underway in New York City at the time, notably a project to decorate the subway using a silicon ester painting medium, which never reached fruition.⁷⁶ As well several art projects participated in the 1939 New York World's Fair.

The Boston Paint Testing and Research Laboratory

By 1937 a Paint Testing and Research Laboratory was set up in Boston.⁷⁷ Frank Sterner was appointed director having been re-assigned after the nationally-publicized uproar over his termination of an artists' union member on the grounds of incompetence.⁷⁸ Rutherford J. Gettens, a trained chemist and conservation scientist working at Harvard University's Fogg Museum, was appointed part-time technical consultant. Gettens was a well-known researcher in the field of conservation science and founding editor of a scholarly journal of international prominence in the field of conservation and restoration.⁷⁹ Sterner and Gettens led an active research program until the laboratory was closed on June 30, 1941 due to curtailment in the W.P.A.

⁷⁵ One of his talks was on the "Pigment of the Painter" with color mixing demonstrations at the American Salon Gallery at 110 East Fifty-ninth Street in November 1940. Clipping, *New York Times*, November 11, 1940, n.p. Doktor Papers, AAA.

⁷⁶ This Subway Art project represented a collaboration of the Public Use of Art Committee and the Artists' Union of New York and is also mentioned in Chapter 5. See for example: Mayer, Ralph. "Techniques of Subway Art", *Art Work. A Magazine for Commercial Artists, Cartoonists and Fine Artists*, Volume 1, June 1938, pp. 10-13, 20; Ralph Mayer Papers, AAA reel 212.

⁷⁷ WPA. AAA DC79:1706-1718.

⁷⁸ WPA. AAA DC61: 551-811

⁷⁹ The journal was *Technical Studies in the Field of the Fine Arts*. For lists of Gettens' publications see: "In Memoriam: Rutherford John Gettens" *Ars Orientalis* X, 1975, pp. 194-205, "Rutherford John Gettens", *International Institute for Conservation News* supplement to *Studies in Conservation*, Vol. 19, No. 3, August 1974, pp. 1-6.

appropriation.⁸⁰

The aims of the laboratory were to avoid the purchase of inferior products for W.P.A. art and to further knowledge about art materials by putting together a corpus of information.⁸¹ Furthermore, the idea was that the laboratory would save costs by conducting economical tests of samples (mandatory in competitive bidding) which had been done by commercial laboratories for high fees. In a letter requesting permission to hire Gettens for \$15 a day for ten days each month the economical features of the project were stressed:

"Right from the start we will save much money in Massachusetts and throughout the nation. for example, we cannot purchase a tube of paint on competitive bid without having the contents of each tube analyzed. This analysis costs \$10.00 per tube (government price) and if ten companies compete we pay \$100.00, plus the cost of the paint, for our first \$.50 order."⁸²

In addition to the director and the technical advisor, the staff of the Paint Testing and Research Laboratory eventually comprised 19 employees.⁸³ Gettens and Sterner emphasized the scientific orientation of the lab proudly publicizing details about the modern equipment of the lab.⁸⁴ This was to be a state-of-the art facility combining scientific expertise and ingenuity with knowledge of artistic praxis.

The laboratory analyzed artists' materials on the basis of composition, working qualities and performance. The staff tested paint contributed by manufacturers. This

⁸⁰. Letter from Frank W. Sterner to Holger Cahill, June 23, 1941. Federal Art Project, Archives of American Art, reel DC80-302. In this letter Sterner requests that the laboratory equipment and records be transferred to the Passive Defense Project. In a letter to Mr. Reynolds of the National Bureau of Standards he explains that he had hoped in so doing to keep the data accumulated by the laboratory intact.

⁸¹. The aims was *not* as Lodge stated to produce paint. See the proposal for a state testing and research laboratory attached to a letter from Richard C. Morrison, Assistant to the National Director of the Federal Art Project and former director of the New England regional projects to Colonel John U. McDonough of the Federal Art Project in Massachusetts dated April 7, 1937. WPA, AAA, DC 79:1708-1718.

⁸². Letter from Richard C. Morrison to Colonel John J. McDonough dated April 7, 1937. WPA, AAA DC79:1717.

⁸³. Sterner, Frank W. and Rutherford J. Gettens, "A Standard for Artists' Materials", *The Magazine of Art*, Vol. 32, No. 9, September 1938, pp. 518-520.

⁸⁴. They mentioned a chemical balance, a microscope, centrifuge, a drying oven, special apparatus for the physical testing of paints, and a humidity and temperature-controlled room. Sterner and Gettens, 1938.

practice of soliciting donations was probably made necessary by the government prohibition of requisitioning specific brands. It later led to complaints that the project would only purchase paints for artwork from manufacturers who had donated samples to the Laboratory for testing.⁸⁵ Although Gettens and Sterner recognized that their observations were in part subjective, they tried to make them as "scientific" as possible by basing them on "carefully planned uniform procedure". They were also industriously generating revenue by testing other commercial and industrial paints for a fee.⁸⁶

Sterner and Gettens took their mandate of publicizing the results of their research seriously. They attended meetings with artists in New England and New York, which required special permission from Washington since the laboratory was technically a state-administered project serving the State of Massachusetts. (See Figure 3.) They organized exhibitions (at the Fogg and at the Whitney in New York City) to present their findings publicly. With artist George Holt, they founded The Boston Painters' Workshop, which was "a school for the practical study of methods and materials in painting". Both day and evening classes were held for a two years but the program was disrupted by the outbreak of World War II.⁸⁷ In 1941 Gettens, Sterner and Holt travelled to Canada where they presented technical data and recipes for artists at the 1941 Conference of Canadian Artists held at Queen's University in Kingston, Ontario. Transcripts of their demonstrations were published with formulas for painters.⁸⁸

⁸⁵ Memorandum to Jay du Von from Wilfred de St. Aubin for Holger Cahill. Records of the Federal Art Project. Record Group 69, AAA, DC79:1367-68.

⁸⁶ Letter from Richard Morrison to Thomas Parker, Assistant Director of the W.P.A. Federal Art Project for Massachusetts dated March 28, 1939. AAA DC80:207.

⁸⁷ The course of study offered by the Workshop beginning in 1940 was "designed for professional painters and advanced or graduate art students. . . for the Workshop will in no way attempt to duplicate the work of the professional art school but rather to complement it." *The Painters' Workshop. A School for the Study of Methods and Materials of Painting. Prospectus for 1941-42*. Ralph Mayer Papers, Archives of American Art, Smithsonian Institution, reel D212: 896-8. The 1942 prospectus can be found in Gettens' archives. Sterner" folder, Gettens Archives, Department of Conservation, Freer Gallery, Smithsonian Institution, Washington, D.C.

⁸⁸ The technical demonstrations done for the Conference of Canadian Artists were published first with the conference proceedings in 1941 and in a separate brochure entitled "Technical Proceedings". On the 50th

Results from research conducted at the lab were published in varied types of journals serving different sectors of the artistic field, such the bulletin of the National Society of Mural Painters, art magazines, *Technical Studies in the Field of Fine Arts* (aimed at conservators, curators and archaeologists), and even a journal of the paint industry.⁸⁹ Gettens was active in conservation and museum organizations as well as in chemical societies.

Gettens only worked part time for the laboratory and it is difficult to distinguish between his production for the New Deal art project and in the context of his job at the Fogg Museum. It is probable that the large staff at the laboratory participated in some of the more general research that Gettens was carrying out during this period, notably for the preparation of an encyclopedia on painting materials.⁹⁰ In the 1930s Gettens was an innovator in using synthetic vinyl resins for fixing and adhesive purposes for art conservation but no records have been found to document any contact between him and artists on applications of the new media for painting.⁹¹

Of all the various efforts made to disseminate information about paint materials and develop better ones, none was as well-publicized as the work towards the establishment of recommended commercial standards for artists' paints which the Boston laboratory initiated.

anniversary of the conference an annotated reprint was produced. Bell, Michael and Frances K. Smith (ed.), *The Kingston Conference Proceedings*, Agnes Etherington Art Gallery, Queens University, Kingston Ontario, 1991 (1941).

⁸⁹ See for example : "Testing Pigments for Use in Fresco Painting", *News Letter* [sic], National Society of Mural Painters, December 27, 1939. Note, this is erroneously dated 1940 in the *Ars Orientalis* bibliography of Gettens' publications. See also National Society of Mural Painters Papers, Archives of American Art D-250A:72-103 and unmicrofilmed materials in storage, Smithsonian Institution, Washington, D.C.; and Gettens, Rutherford John and Frank Sterner, "Comparison of Effect of Sunlight and Carbon Arc Light on Artists' Oil Paints", *American Paint Journal*, vol. 25, p. 16.

⁹⁰ It was co-authored with George Leslie Stout, one of his supervisors at the Fogg and published first as a series of journal articles in *Technical Studies in the Field of the Fine Arts*. Gettens, Rutherford J. and George L. Stout. "Preface to the Original Edition", *Painting Materials. A Short Encyclopedia*, New York: Dover (1966 reprint of 1942 publication), pp. v-vi.

⁹¹ For more details on this work see "Early Use of Synthetic Media for Art Conservation" in Chapter 6.

The First Recommended Commercial Standard for Artists' Paints in the U.S.

The Boston Paint Testing and Research Laboratory is perhaps best remembered for its role in promoting the collaboration of artists, paintmakers and other concerned groups to become involved in setting standards for artists' paints.⁹² Gettens had suggested at the 1935 meeting of the American Museum Association the formation of a "Commission for the Standardization of Artists' Materials" patterned after the Commission for the Standardization of Biological Stains.⁹³ In a similar vein, artists' paint manufacturers like Henry Levison, who was later to become a pioneer in synthetic paintmaking and paint testing methods, had suggested in 1937 that the government procedure of buying on specifications include mandatory testing to be fair to all manufacturers since:

"it is long practice in the general paint industry . . . to bid on exact specifications and supply materials with no regard to the specifications or quality. . . the best that can be done, in our opinion, is to require that the colors be among the ones surely and generally know to be absolutely dependable . . . that trade naming of colors be disregarded and exact proper naming (true chemical names where possible) be required".⁹⁴

The Boston laboratory had become increasingly concerned about the standardization of artists' paints as their test results accumulated. The idea of instituting some form of "scientific" control, rather than relying on the opinions of artists, appealed to arts administrators, as is apparent in a letter proposing the idea:

"From the examination of a large number of specimens by such means it has been found that a few American manufacturers, in spite of strong competition and modern methods of merchandising, are striving to produce paints of good quality and fair permanence. There are others however who are marketing a

⁹². Gettens, Rutherford John and Frank Sterner, "Sponsor's Notes on the Commercial Standard for Artists' Oil Paints", *Artists Oil Paints, Commercial Standard CS 98-42*, U.S. Government Printing Office, Washington, D.C., 1942, pp. 11-13.

⁹³. AAA DC79:1706-1718.

⁹⁴. In an untitled document attached to Letter from Richard C. Morrison (Assistant to the National Director of the Federal Art Project) to John H. McDonough, Federal Art Project for Massachusetts, April 7, 1937. WPA. AAA DC79:1710.

product which had no place on the palette of an artists who is sincerely interested in craftsmanship and technical perfection. It is difficult, unfortunately, for the average artist with limited technical training to distinguish between materials for permanent painting and those of non-durable nature."⁹⁵

Initially the standard did not exclude formulas using synthetic media. In fact, by the 1930s conservators were becoming aware that "the common terms "fresco", "oil", "watercolor", "tempera" and "encaustic" had a limited utility."⁹⁶ New methods of describing paint were being developed by technicians in the field of art.⁹⁷ The laboratory hoped that the standards would cover a wide range of issues related to the manufacture and marketing of artists' paints ranging from the relatively simple requirement of making sure containers were properly filled, through questions of developing common nomenclature for pigments to the more difficult task of deciding on standards for permanence (which involved developing tests acceptable to both scientists and manufacturers). Eventually, however, the scope of the project of writing a first commercial standard was narrowed to oil paints for the sake of simplifying the complex negotiations amongst manufacturers, artists, conservators and other concerned parties.

The laboratory approached the National Bureau of Standards for assistance. The resulting first Recommended Commercial Standard for Artists' Oil Paints (CS98-42) which was adopted in 1942 by a prestigious list of supporters, was the first concerted effort to establish clear nomenclature and criteria for chemical composition and performance of artists' paints in North America.⁹⁸ It was developed in consultation

⁹⁵ *ibid.*, p. 520.

⁹⁶ Gettens, Rutherford John. "A Quarter Century of Technical Research in Art at Harvard", unpublished typescript, "Fogg Museum -- Technical Research" folder, Gettens Archives, Department of Conservation, Freer Gallery, Smithsonian Institution, Washington, D.C. p. 14.

⁹⁷ See for example, Rawlins, F. Ian G. and Stout, George Leslie. "Brief Methods of Describing Paint", *Technical Studies in the Field of the Fine Arts*, Volume XI, Number 1, July 1941, Volume X, Number 1, pp. 37-46.

⁹⁸ Copies of this first recommended standard and related correspondence can be found in both Gettens' Archives at the Conservation Department of the Freer Gallery of Art and in the Mayer Papers located in the Archives of American Art, see in particular the microfilm AAA D213. See also Sterner, Frank. "The Recommended Commercial Standard for Artists' Oil Paints", in (Bell, Michael and Frances K. Smith, ed.) *The Kingston Conference Proceedings*, Agnes Etherington Art Gallery, Queens University, Kingston, Ontario, 1991 (reprint of 1941 original), p.p. 160-167.

with manufacturers and representatives of artists' organizations (which were carefully contacted in light of Sterner's earlier problems with artists' unions). Public meetings held at the Fogg Museum in Massachusetts (in 1939) and at the Museum of Modern Art (in 1940) provided a forum for exchanges between artists, research chemists, paint manufacturers, chemical suppliers, conservators, arts administrators and museum curators.

New Deal Technical Publications Related to Synthetic Media

The difficulties of establishing regulations for even comparatively simple materials, like artists' oil paints, may have hampered development of synthetic paints for use on the various New Deal projects, but formulas for artists which use them did circulate. Technical circulars for artists and artisans give evidence of considerable interest in developing new painting media. For example, according to a 1940 report on the activities of the Federal Art Project:

"A series of brochures dealing with technical problems of the artist have been planned and are being prepared with the assistance of the various state art projects. Manuals on *Fresco Painting* and on *Carborundum Print* have been completed. Bibliographies for use in the conducting of art center activities and on art and craft subjects, hobby activities and film and visual aids are in final form.

Technical bulletins on sculpture, entitled *The Use of Dextrin and Magnacite for Casting*, *Use of Latex for Mold*, *Use of the Sculptor's Enlarging Scale* and *Patining*, are in preparation by the New York Art Project.

Manuals on *Petrachrome*, *Terra Cotta*, *Mosaic*, and the *Technique of Casein Tempera on Caustic Plaster* and *Emulsions as Painting Mediums* are being completed by the Southern California Art project."⁹⁹

This list suggests a coordinated effort to cover a range of different topics, particularly related to the use of new synthetic painting materials. It is however probable that most of these publications did not appear since an extensive search of government document holdings and archives have only located five of those mentioned in the above citation,

⁹⁹. "Report on the Accomplishment of the WPA Art Program, June 18, 1940, pp. 4-7. mimeographed report. Record Group 69, WPA "General Subject" series, 211.53 "Reports", 1939. Reel 50.

none containing information about use of synthetic artists' paints.¹⁰⁰

The lack of reference to synthetic painting media is somewhat curious in the *Handbook on the Use of Fresco*. It was prepared by the president of the National Society of Mural Painters who was also an arts administrator in New Deal projects.¹⁰¹ This was a technical handbook for artists (not arts administrators) intended to be a "practical manual for the use of fresco painters and not merely another discourse on the beauties of the medium."¹⁰² The author had written to fresco painters across the U.S. asking for information about techniques, formulas, materials and vendors.¹⁰³ The completed bulletin gives a brief description of the process and mentions specific authorities for technical information identifying them at times only by their last names. The authorities appear to fall into two categories: authors of artists' handbooks produced in Germany, England and France (like Max Doerner, Gardiner Hale, R. La Montaigne St. Hubert) and muralists active in the United States and Mexico such as Diego Rivera and José Clemente Orozco. As well the name of a certain "Gutiérrez" appears. Gutiérrez is probably a former participant in Siqueiros' New York workshop

¹⁰⁰. In addition to checking publication records for government documents a this search was conducted first by examining the microfilmed records of Federal and State projects at the Archives of American Art. Subsequently the actual remaining records for the Federal documents were examined in the National Archives in Washington. A visit to the State archives in Southern California and New York City might uncover other evidence.

¹⁰¹. His name was Geoffrey Norman. *Fresco Painting: A circular presenting the technique of Fresco painting, including preparation of the wall, mixing and application of the mortar, preparation of cartoons, grinding of pigment and notes on painting*. W.P.A. Technical Series, Art Circular No. 4, September 10, 1940. Federal works Agency, Work Projects Administration, Division of Professional and Service Projects. #1509 Archives of American Art, DC 57: 316-341.

¹⁰². Letter to James Michael Newell of the National Society of Mural Painters in New York City from Geoffrey Norman dated January 8, 1940. Federal Art Project, General Subject Series "Making of a Fresco", Archives of American Art, reel 50: 1427 ff.

¹⁰³. He seems to have tailored the questions to ask questions about the practices of individual artists but I have been unable to locate a complete list of those surveyed. In his letter to James Michael Newell dated January 8, 1940, he asked six questions beginning with an inquiry about Mr. Newell's practice of using two mortar coats which Mr. Norman felt was a departure from the more common practice of only using one rough coat and proceeding with questions about techniques for insuring correct tensions between the coats. He asked the artist to itemize his palette, for the names of preferred vendors, whether it is possible to use only domestic colors and get the same brilliance, and about the proportion of limewater to be used in wetting down the wall before plastering. Archives of American Art, reel 50.

known for his innovative research on synthetic materials. (See Chapter 5).

This failure to mention synthetic media is especially surprising given the interest in modern media at the Washington technical unit which prepared it. A possible explanation may be that reviewers made suggestions for changes.¹⁰⁴ One of the reviewers was an assistant to Orozco, who was at that point was still resisting the use of synthetic media in the arts.¹⁰⁵ Thus, the omission of synthetic formulae could be related to rivalries amongst the three most prominent Mexican muralists, *los tres grandes* (Orozco, Rivera and Siqueiros) and their followers.

New Deal Art Projects and the War Effort

The bulk of the New Deal art projects came to a halt during World War II. During wartime painters and paint chemists participated in a variety of projects related to the war effort some of which used their artistic and technical skills. Many artists were employed as war artists or even portrait painters, but the connections between wartime work and pre-war involvement in art worlds were occasionally surprising. (For example, conservation scientist Gettens was eventually assigned to the Manhattan Project to work on studies of plutonium related to the development of nuclear weapons at Los Alamos.)

Even before the official U.S. involvement in World War II in December, 1941 young Americans eager to join in the fight had been leaving to enlist in Spain and Canada. At home citizens submitted projects to aid in the war effort to the U.S. War Department and various advisory boards like the American Defense Research Council.

¹⁰⁴. Letter to Alfred Crimi from Geoffrey Norman for Holger Cahill July 9, 1940. Federal Art Project, General Subject Series "Making of a Fresco", Archives of American Art, reel 50: 1427 ff. In an published interview Crimi also conspicuously omits mention of Siqueiros while citing the importance of Rivera and Orozco for mural painting. Anonymous. "Alfred D. Crimi Paints a Fresco", *American Artist*, Volume 5, October 1941, pp. 5-8.

¹⁰⁵. His name was Lewis Rubenstein and he assisted Orozco on frescos for the Museum of Modern Art in 1940.

One proposal generated by a team of New Deal art project employees concerned an interdisciplinary research project dubbed "The Passive Defense Project".

The Passive Defense Project was developed in consultation with members of the Boston Paint Testing and Research Laboratory. It was approved by the Secretary of War and fully sponsored by the Army Engineers War Department but run by the W.P.A.. The first phase of the project was called "Design for Camouflage Experimentation". However, the project took on considerable importance for a brief period just prior to the U.S. engagement in the war because the War Department made this project

"the sole medium for making plans for the design, construction, protection, and concealment of military and industrial installations"¹⁰⁶.

The project was located at the Massachusetts Institute of Technology (M.I.T.) and consisted of six basic administrative units at its inception in December 1940: a physical measurements laboratory, a photography laboratory, a model-making shop, a department of camouflage design, a chemistry laboratory, and a department of industrial installation.¹⁰⁷

The advisory committee included a multidisciplinary team of scientists, technicians, artists and designers. Scientists, scholars and military engineers from the U.S. Army, from W.P.A. projects and from M.I.T., and Harvard University were recruited.¹⁰⁸ Artists and technicians in physics, chemistry, engineering, photography, model making, and architecture were solicited. The contributions of artists and designers was deemed crucial to the project:

"The Art Project personnel is the first natural store to feed this program, and speed in transferring necessary workers is essential, so that these people may be

¹⁰⁶. Letter from Fred Rauch, Acting Commissioner to Denis W. Delaney, Works Projects Administrator, n.d. AAA DC80:251.

¹⁰⁷. Memorandum from Loren S. Green to Holger Cahill on the subject of the "Massachusetts Camouflage Project" dated December 9, 1940. AAA DC:253-264.

¹⁰⁸. The personnel included professors of architecture, chemistry, psychology, physics, engineering, of aerial photography and maps, as well as museum curators and conservators, including Edward W. Forbes and George Leslie Stout of the Fogg Art Museum.

"cleared" by the Army Intelligence or the FBI."¹⁰⁹

In the summer of 1941, the Passive Defense Project took over the Boston Paint Testing and Research Laboratory equipment and some of its staff.¹¹⁰ The Paint Testing and Research Laboratory appears also to have contributed "paints, new experimental materials, resins, dyes, testing mediums, . . . etc."¹¹¹

The exact nature of the painting media investigated remains unclear due to missing documentation. Initially arrangements were made to transfer all the technical documentation from the Boston Paint Testing and Research Laboratory to the Passive Defense Project, in order to keep the technical information intact and usable for related research, rather than sending it to government archives.¹¹² However the outbreak of World War II led to confusion about the storage of specimens and files which apparently had not been permanently transferred to M.I.T..¹¹³ A second set of negotiations was undertaken which again led to official approval for the transfer of the materials to M.I.T..¹¹⁴ No record of the documents has been found at M.I.T..¹¹⁵ In

¹⁰⁹. Untitled document describing Project W.P. 22242 "Design for Camouflage Experimentation", probably attached to letter from Fred Rauch, Acting Commissioner to Denis W. Delaney, Works Projects Administrator, n.d. AAA DC80:252-261.

¹¹⁰. WPA, AAA DC79:1308-1368 and DC80: 302-308.

¹¹¹. *ibid.* DC80: 261.

¹¹². The records were to accompany equipment and specimens with some of the personnel which were transferred to the Passive Defense Project at M.I.T.. See in particular the letter from Frank Sterner to the National Bureau of Standards (with copies sent to Holger Cahill and R.C. Morrison) of June 23, 1941, and Letter from Lawrence J. Bresnahan, Deputy Administrator of the W.P.A. for Massachusetts to Howard O. Hunter, Action Commissioner of the W.P.A. in Washington. Records of the W.P.A. Record Group 69, AAA reel DC80: 303, 305.

¹¹³. These papers and specimens apparently remained for some time in the possession of Frank Sterner, former head of the Paint Testing and Research Laboratory. Sterner wrote to Holger Cahill on April 4, 1942 using letterhead from the Painters' Workshop, a privately-run school, that "Due to the constant tossing around that the former Paint Testing and Research Laboratory has taken in the last year, specimens, files, and records have taken a rather sad beaten [sic]. It would be my plan that the material be reorganized and established so that it could be turned over to an appropriate agency sometime before July"(AAA DC79:1308). Records of the W.P.A. Record Group 69, Central Correspondence Files for Massachusetts (651.31) AAA reel DC79, 1308-1368.

¹¹⁴. See in particular the May 1942 correspondence between Whitney Atchley and Dennis W. Delaney. Records of the W.P.A. Record Group 69, AAA reel DC79: 1368.

¹¹⁵. Neither the M.I.T. Archives nor the Center for Materials Research in Archeology and Ethnology were able to locate any trace of the written records.

1951 specimens and documents from the laboratory were purportedly left at the Fogg Art Museum at Harvard University in the custody of a conservator, but most of the written documentation appears to have subsequently been misplaced (or perhaps discarded).¹¹⁶

Concluding Remarks: The New Deal and Social Structures for the Pursuit of Art Technical Concerns

Near the end of the W.P.A. Federal Art Project, the largest New Deal art project, one administrator wrote that the primary purpose of the project had been to allow artists to maintain and perfect technical skills and knowledge. In his account the goal of the project had been

"the conservation of the skills and talents of American artists. . . In this objective the art program has striven to make the skills and talents of these artists of the greatest value to the community. This has meant a continued insistence on high professional standards of performance and an orientation toward community needs.

The employment of creative artists by the public has secured outstanding examples of contemporary American art. The project has helped to create a broader national art consciousness through an extensive program of public participation activities, particularly through the community art centers. Through research projects . . . it has helped to clarify the native American background in the arts. . . "¹¹⁷

¹¹⁶ After taking a new position at the Freer Gallery in Washington Gettens wrote: "I finally decided to leave all of the Federal Project material at the Fogg. I really will have no place to store it especially since I will have no opportunity to do research in that field. It is now temporarily in the custody of Dick Buck who will perhaps remain at the Fogg for the winter. I put all the record note books with the correspondence in the wooden file which still stands next to my former desk. The specimens are of course scattered in various drawers and files. The tinting strength standards, the set I took to N.Y. are hanging on a wall. The most valuable specimens I think, are the protective coating series which hang in frames in both the chemical lab. and in the paint lab. These grow more valuable each year and I am especially interested that they be preserved. If you get near Cambridge this winter you might take a look at all that material. The Mellon Institute might be interested in some of it. I will speak to Feller about it the next time I see him." Letter from Rutherford J. Gettens to Ralph Mayer, October 2, 1951. "Mayer Correspondence to '61" folder, Gettens Archives, Department of Conservation, Freer Gallery, Smithsonian Institution, Washington, D.C.. Dick Buck, who is now deceased, became head of the Intermuseum Conservation Laboratory at Oberlin College. The Oberlin Archives Department, and the Intermuseum Conservation Laboratory have been unable to locate any of these papers. Similarly there is no record of the papers at the Fogg Museum or at Harvard although some of the specimens and panels remained in the custody of the Analytical Department of the Fogg Museum Conservation Department in 1995.

¹¹⁷"Report on the Accomplishment of the WPA Art Program, June 18, 1940, p.24. mimeographed report. Record Group 69, WPA "General Subject" series, 211.53 "Reports", 1939. Reel 50.

Thus by the end of the projects, some administrators considered that the works of art produced by New Deal projects were secondary byproducts of the primary social and political goal of maintaining a trained body of technically skilled artists by giving them a chance to work. Yet defining artistic competence and technical skills as applied to fine arts was fraught with difficulty, prompting administrators to channel their regulatory urges into work on developing permanent art materials and modern techniques for enduring art with the aid of scientific research methods.

Although research on standards for artists' paints appears to have been promoted by arts administrators and bureaucrats as a means of establishing authority and control over artistic production in public art projects, interest in improving art materials suited the goals of other participants in art worlds. Work on standards was wholeheartedly endorsed by artists' unions customarily opposed to any institutional constraints on artistic freedom. Prominent manufacturers of art supplies in the United States participated in the process of defining standards, even though this collaboration might appear to compromise their fierce competition in the art materials trade. By all accounts the development of the First Recommended Commercial Standard for Artists Oil Paints was a public relations triumph. It remains one of the lasting accomplishments in discourse about the New Deal art projects, illustrating the importance of state patronage as a catalyst in collaborative efforts in the fields of science, art, technology and business.

The impact of the standard on the actual manufacture of art materials is however debatable and it served no purpose as an administrative device for controlling artistic production as later discussion on the enforcement of the standard will show. Rather it had a serendipitous effect of actually promoting interdisciplinary research on issues relevant to artistic practice. The standing committee continued work on revising the standard until the 1960s. Work on commercial standards for artists' paints and related products continues to this day, although the institutional configuration has altered. (See Chapter 6.)

Discourse about artists' paints and techniques in the context of the New Deal art projects reveals ways in which bureaucratic constraints, economic preoccupations, theories of art, other ideologies and more general social processes are embedded in the historical interface between artistic practice and arts administration in the U.S.. The shift of focus from aesthetic and ideological debates about style and subject to a focus on technique and materials was way of resolving conflicts. The confidence in scientific testing and new technologies shared by both government officials and artists' organizations allowed them to reach a consensus on a limited range of art-technical matters and established a basis of support for the appropriation of synthetic painting media in the arts where the new media were heralded by many as a manifestation of the cultural benefits of science.

CHAPTER 4 -- Paintmaking and the New York Art Scene: the Case of Len Bocour and Sam Golden

Synthetic paints were closely associated with various high-culture New York-based stylistic movements which gained international prominence in the period immediately following World War II. Rising stars in the international art market were early users of the new media. Two pioneers in the development of synthetic painting media for artists -- Len Bocour and Sam Golden-- had a small artisanal paintmaking business in the heart of New York City with close ties to the emerging avant-garde at mid-century. Bocour and Golden developed what appears to be the first commercially-available line of acrylic resin paints for professional artists. Like another pioneer paintmaker, Mexican José Gutiérrez, they had been active in the New York art scene in the 1930s, but in slightly different circles than the Mexicans.

The story of their work raises questions about the place of artists' paintmakers in the making of modern art. It provides insights into artistic practices of members of an elite in American painting in the twentieth century. In addition, Bocour and Golden were the only survivors of the first generation of pioneers in the manufacture of synthetic paints for artists who were still alive at the time this research project began.¹ Their first-hand testimony underlines the complex interplay of personal and professional identities in relations between the artists, paintmakers and chemists.

Paintmaking and Artistic Aspirations: Bocour Artist Colors

The history of Bocour and Golden's involvement in making artists' colors begins with stories about Bocour's early commitment to art and contact with artists dating from

¹. The author spoke with Leonard Bocour on using acrylic paint in the 1980s and had telephone conversations with him about this particular research project in 1991 and 1992. Unfortunately Bocour was ill at the time. He passed away before the author could arrange a visit to New York to conduct an intensive interview. The research on his papers was conducted while the author helped to prepare them for donation to the Archives of American Art and the National Gallery (which took the portion of the papers containing technical information on paintmaking).

his youth in the 1920s.

Bocour's Background and Love of Art

Born and raised in New York City, Leonard Bocour (born Bogdanoff, 1910-1993)² was the youngest child of an immigrant blacksmith who made wrought iron architectural accoutrements.³ Bocour described his trajectory this way:

"I was always interested in art . . . my friend [Irwin Lefcourt] and I . . . used to go to the Metropolitan Museum when I was like, fifteen or sixteen; and in our block it was a little unheard of . . . So one day he came and told me about an art school that was for free -- the National Academy . . . and . . . we were accepted. That was in 1926. . . My mother was outraged when she discovered what I'd done. I said 'Don't worry Mama . . . I'm going to be a commercial artist and they make a lot of money' "⁴

Soon Bocour transferred to the Art Student's League. Organized by members of the National Academy of Design's Art School in 1875 when the school had closed temporarily, the League was a centre of progressive art education.⁵ It had no set curriculum, students were included in decision-making and it was a hospitable place for women, both as students and as teachers. Many of the foremost painters in twentieth-century America were involved with the League at some point, as students or teachers.⁶ By the late 1920s, when Bocour began to attend classes there, battles were raging

². He was always known as Len or Lennie except to his wife. Interview with Steve Steinberg, New York Central Art Supplies, May 1995.

³. He was born at 217 East 98th Street and he died at his Upper West Side home at 89th and Riverside Drive. Although only a few blocks away, this represents significant upward mobility in terms of socioeconomic status.

⁴. Interview with Leonard Bocour by Paul Cummings, June 8, 1978, AAA, Tape 1 Side A, pp. 2-3 of transcript.

⁵. Paschal, Robert. "A Little Art History: Art Student's League", *ARTtalk*, Volume 2, No. 7, p. 1; and Pisano, Ronald G. (with Beverly Rood). "A Brief History of the Art Students League", *The Art Students League. Selections from the Permanent Collection*. New York: Gallery Association of New York State, 1987, pp. 7-14.

⁶. For example, well-known teachers included William Merritt Chase, Thomas Eakins, Robert Henri, Everett Shinn, George Bellows, John Sloan, Max Weber, Hans Hofmann, and Stuart Davis. Among the students who became famous artists were Jackson Pollock, Georgia O'Keeffe, Louise Nevelson, David Smith and Audrey Flack.

amongst abstract artists, social realists, and proponents of American scene painting. Teachers at the League led their students in radically different directions. Later in the 1930s and 1940s, the League became a stronghold of various realist or representational artists, Thomas Hart Benton being one of the most prominent. Yet some students from this period became leaders in abstraction, notably Jackson Pollock, one of Benton's star pupils who eventually abandoned representational painting in favour of an all-over style of gestural abstraction dubbed "abstract expressionism" and "action painting". While studying at the Art Students' League Bocour began to meet artists and art students.

When Bocour was about eighteen he recounts his first meeting with a practicing artist outside of the classroom, Emil Ganso:

"I want to tell you that it was *very* exciting. He had a studio, you know, a walkup on Sixth Avenue. . . and we were real bobbysoxers -- *everything* was wonderful at that time. It was the greatest -- I tell you. . . He was the first artist I'd met outside of school -- you know, teachers you don't consider "artists". He had a scrapbook, he'd had exhibitions. . . I sort of hung around."⁷

Bocour swept the floor and made himself useful to the older artist in the studio. Ganso, who had studied in Europe, taught him how to grind artists' colors by hand. According to Bocour, Ganso was a "great German technician" using "recipes, he never called them formulas" learned in Europe in art classes and adapted from an original German-language copy of Max Doerner's book on art materials (which appeared in English translation in 1934).⁸ Ganso may have studied under Doerner in Munich prior to immigrating to America.⁹ For several years Bocour continued to take night classes in

⁷. *ibid.* pp. 4-6.

⁸. Bocour and Cummings Interview, 1978. See also Doerner, Max. *The Materials of the Artist and their Use in Painting with Notes of the Techniques of the Old Masters*. (Neuhaus, E. trans.). New York: Harcourt, Brace, and World. 1962 (reprinting of 1934 translation). The first German edition appeared in 1921.

⁹. Bocour asserted that Ganso had studied at the "Doerner Institute", a name which was later given to a different institute in 1938, however information about Ganso's education in Europe is not included in standard bibliographic sources. If Ganso did study with Doerner it could not have been for very long since Ganso (1895-1941) immigrated to the U.S. from Germany in 1912, when he was around 18. Cummings, Paul. *A Dictionary of Contemporary American Artists*. New York: St. Martin's Press.

art and frequent a growing number of acquaintances who were struggling to become self-sufficient artists. Then in his words:

"... To come to the great moment ... this is 1932. I was working at an advertising agency not doing anything that had to do with art ... very monotonous stupid work. ... And I got fired ... it was ... the Depression ... The future looked very bleak. There was no unemployment insurance, none of the social services. I went to see my spiritual leader Emil Ganso ... And it was he who suggested that I make paint for artists. And nobody [could go] into a surer thing ... [because] "If you don't sell it we can always use it."¹⁰

Bocour often retold this story, situating his decision to make artists' paints firmly in the context of his early love of art and artists. In his accounts his paintmaking career was born of economic necessity but it was also a creative way of staying involved with art.

Small Entrepreneurial Paintmakers and the New York Art Scene in the 1930s

Bocour set up shop in partnership with Irwin Lefcourt.¹¹ They made hand-ground oil paints which they first called "Lefcourt", because the name sounded French and Paris was still the leading international art center as far as most of the potential clients were concerned. Soon they created a business name -- Bocour-- by combining elements of each of their last names (**Bogdanoff** and **Lefcourt**). Bogdanoff later changed his name to the name of his company and will be referred to by his adopted name here for the sake of simplicity.¹²

¹⁰ Bocour and Cummings Interview 1978. Tape 1. Side A. Transcript p. 6.

¹¹ Irwin was an old friend from public school. They started business in November, 1932 but they didn't make their first sale until February of the following year. According to Bocour "we really went into action on February 14th, 1933-- Saint Valentine's Day and I guess it's our saint --Love --and we've always loved the art." Handwritten transcript, undated. Bocour Papers, courtesy Mrs. Ruth Bocour, New York City.

¹² There was a considerable time-lag between starting the business and completing the legal paperwork for the business and name changes. "Bocour" was not registered as a trade mark until December 14, 1942 (Registration Certificate No. 401771). Bogdanoff obtained a certificate for conducting the business "Bocour Hand Ground Artist Colors" under an assumed name in 1949. He did not change his name legally until 1951 at which time he changed the names of his wife at the time, actress Carole Mary Wheeler, and son Peter (witnessed in City Court of City of New York, New York County, M5302). Bocour Artists Colors was incorporated in the State of New York in 1954. Bocour Papers, AAA.

Initially Bocour did not intend to abandon his aspirations of becoming a self-supporting artist but saw paintmaking as a way to stay in touch with art while making a living. In Bocour's words:

"Calling it a business was a joke. The idea was very simple. I planned to make paint for three days and paint for three days. On the seventh day I would rest."¹³

The partners rented a tiny studio at 2 West 15th Street, in the heart of an area teeming with artists' studios on the outskirts of Greenwich Village. The studio had a desk which they used for grinding colours but was so small that if he stretched out both hands Bocour could touch the opposite walls of the office. Eventually they were able to afford a larger space in the same building which they described as a "factory-loft" and they stayed there until after the war. The studio was in an old mansion that had been converted to light manufacturing except for the top floor of the building which had skylit artists' studios. One of the artists in the building was William Zorach. Zorach, who taught at the Art Student's League, was a Greenwich village resident and member of a circle of bohemian taste-setters. In nearby Greenwich Village key figures like Marcel Duchamp and the Baroness Elsa von Freytag-Loringhoven "fused modern art and modern life" re-inventing themselves through psychoanalysis, feminism, fashion, revolutionary politics and unorthodox sexual relationships.¹⁴ Around the corner on 14th Street were other studios with rising stars in the New York art scene like Yasuo Kuniyoshi, just back from France.¹⁵ Nearby too was a hub of artistic activity centered on Union Square, a forum for radicalism and site of open-air rallies, where soapbox orators exercised the right to free speech as shoppers hunted for bargains in what was sometimes called "the poor man's Fifth Avenue" (a reference to New York's most

¹³. Busa, Christopher. "Leonard Bocour 'Mister Aqua-tec'", *Provincetown Arts*, 1990, p. 41.

¹⁴. Watson, Steven. *Strange Bedfellows. The First American Avant-Garde*. New York: Abbeville Press Publishers, p. 7.

¹⁵. Goodrich, Lloyd. "Yasuo Kuniyoshi", in Bauer, John (editor) *New Art in America. Fifty Painters of the 20th Century*, New York: Praeger, 1957, pp. 157-159.

expensive shopping district).¹⁶ In this location Bocour made important contacts with artists who talked with him about their work and what characteristics they wanted in their paints. He later referred to this studio as "the spiritual home of Bocour Colors" maintaining that

"everybody who was anybody came, passed through those doors, de Kooning and Rothko and Morris Louis and lots more."¹⁷

Bocour peddled paint from studio to studio, making his first sale to painter Leon Kroll, an older established painter who had studied in Paris. He developed a small clientele of fairly established artists as early steady customers¹⁸ and soon many painters began to come by to his convenient location as the reputation of his hand-ground paints grew. Bocour also appealed to cash-strapped younger artists because he was willing to give credit or barter and he also gave samples of paint away:

"I had what I now refer to as the Bocour Bread Line. You see, we used to grind paint. . . by hand. . . And you could not make just the right amount of color to fit the tube. There would always be a little bit of paint left over, and if it was enough to fill half a tube, I would put it in a tube. But if it was not enough then I would put it in a piece of wax paper and throw it in this basket.

And Morris [Louis] was a constant visitor to . . . pick up paint. . . it was there and it was for free and anybody could help themselves, because to throw away paint was like throwing away food. You know people were starving and I just couldn't see myself doing it."¹⁹

Bocour's imaginative arrangements for solving the dilemma of surviving the Depression with little cash are legendary, for example:

"There is a story that Leonard needed some printing done for his business, and the printer was willing to swap the job for some art, but all he would accept was a Raphael Soyer. So Lennie went to ask Soyer to swap a painting for some

¹⁶. Among Bocour's customers were members of the so-called "Fourteenth Street School" of painting (Reginald Marsh, Morris Kantor and Raphael and Moses Soyer) who were sometimes seen as a revival of the Ash Can School, painted scenes from Union Square. Brown, Milton. *American Painting from the Armory Show to the Depression*, Princeton, New Jersey: Princeton University Press, 1955, pp. 182-186.

¹⁷. "Interview with Leonard Bocour", 1985, Morris Louis Estate Papers, AAA. Transcription of Tapes 30, 31, 32, 33, p. 3.

¹⁸. Some of his early regular customers included: Joseph De Martini, Seymour Fogel, Irving Marantz.

¹⁹. "Interview with Leonard Bocour", Morris Louis Estate Papers, AAA. Transcription of Tapes 30, 31, 32, 33, p. 3.

paint. Soyer said he didn't need any paint at that time, but his pal Cikovsky did. Soyer needed a jacket, so Cikovsky gave a jacket to Soyer, Soyer gave the art work to Bocour and Lennie gave a stack of hand-made paints to Cikovsky, and thus got his printing.²⁰

These were important years for forging contacts in the expanding communities of artists. Political battles raged and Bocour attended meetings of the artists' groups, and went to social events and gallery openings. Yet it was an insecure existence economically. Lefcourt decided to leave when he was offered a position as print curator at the Smithsonian Institution.²¹ In the late 1930s Bocour invited his nephew Sam Golden (who was only four years younger) to join him grinding paints.²² Golden had no background in art or chemistry but quickly learned the basics of making hand ground colours from Bocour.²³ The Great Depression was in full swing at this time. In Golden's words:

"things were not good [but] you had the WPA. Artists at least now were able to survive. The WPA brought the art world to New York. Because now the artists were able to . . . to paint and eat. It took the art world to the U.S. Because now the artists could produce."²⁴

Shortly after the paintmaking company was set up, the New Deal art projects had begun and this infusion of cash into artmaking activities had made it possible for Bocour to stay in business. The small regular income from the projects meant that artists had a bit more money to buy paints for their own projects. Bocour also made paints for the Treasury Relief Art Project and later mentioned participating in a project as a colour consultant²⁵, but he does not appear to have been directly hired on any of

²⁰. "Leonard Bocour Named to NAMTA Hall of Fame". *Art Material Trade News*, reprint from June 1974, n.p. Bocour Papers, AAA.

²¹. Lefcourt later owned an art gallery on 7th Avenue in New York City. Ruth Bocour Interview 1993. Interview with Sam Golden by Jan Marontate, July 1, 1991.

²². Sam Golden was born in New York City on May 20, 1914. Sam Golden Interview Tape #6.

²³. Golden's father ran a small dairy store in Brooklyn where he had attended high school and a year of college.

²⁴. Golden refers here to the best-known group of New Deal art projects, those organized under the auspices of the Work Project Administration, later renamed Works Progress Administration (W.P.A.). Sam Golden Interview, 1991.

²⁵. A draft of his *curriculum vitae* in his papers indicated that he was a "color consultant to the

the New Deal art projects as an artist.

As in the case of the Mexican muralists and their entourage, many New York-based artists became involved in the search for new techniques and the rediscovery of old ones. Theories about the formal qualities of art objects and methods of working originating in cubism, surrealism and dada acted to extend the range of materials used in fine art. Yet, at the same time, cost and craftsmanship were issues. Before World War II Bocour and Golden concentrated on high-quality hand-ground colours because there was a demand for supplies made using European artisanal techniques and this set Bocour Artist Colors apart from larger American paintmakers, like Grumbacher or F.W. Weber who used mechanized production techniques. Bocour and Golden were not unique though. Golden recalled:

"in those days hand-ground colors were in vogue. . . every time you turned around there was a guy setting up a business."²⁶

With the appearance of the English version of Doerner's book in 1934 and later, the 1940 publication of an artists' handbook by Ralph Mayer, other small entrepreneurs had access to formulas for painters and several apparently set up businesses to make paint by hand too. No evidence has been found that any other of these small New York-based entrepreneurs from the 1930s stayed in business very long, although as we shall see another small artists' paintmaking company set up at about the same time by Henry Levison in Cincinnati flourished.²⁷ [José Gutiérrez' interest in research on paintmaking dates from activities he undertook in New York City during this period although he did not begin commercial production of artists' painting media until he was established in Mexico City in the 1950s.]

In the 1930s this artisanal paintmaking in New York City might almost be

Treasury Relief Art Project" in 1937. Bocour Papers, courtesy Mrs. Ruth Bocour, New York City.

²⁶. Sam Golden Interview, July 1991, Tape 3.

²⁷. These were often aspiring artists who made paint for a few months and then moved on to other occupations. Golden Interview 1991.

described as seasonal employment. Important shows at galleries and museums were held during the principal cultural season from September through May and that is when most painters were at work in the city. Before the advent of air conditioning most wealthy New Yorkers fled the steamy city streets during the summer. Artists also moved to summer communities, notably in Provincetown on Cape Cod and in East Hampton. For several years before the second World War Bocour would take the summers off to travel from one artists' colony to another roaming from California to New Mexico to Woodstock to Provincetown. When war came he was declared physically unfit for service (4F) purportedly due to an injury sustained when he was struck by lightning while modeling for artists in Gallup, New Mexico.

During the war, Bocour kept the paintmaking studio but drastically reduced production of paints due to shortages of materials.²⁸ Golden worked at other jobs. Bocour's studio became a stop-over for servicemen-artists on leave, many of whom had heard about him through mutual acquaintances. New artists starting out in the city also gathered at the studio for parties and life drawing sessions, sometimes with undraped models (see Figure 2). Jack Levine, an artist who he met during this period recalled:

"Back around 1945 I used to sleep off hangovers on an old leather couch in Lenny's 15th Street shop where he made hand-ground colors for artists. Towering over a ground-glass topped table he would create huge appetizing mountains of cobalt blue and rose madder. Already the Bocour hand-ground colors were well-known and popular with a growing circle of artists.

On the Sabbath, the tables were cleared for action and the regular Saturday afternoon crap game would take place.

But more than all this, the brilliant mounds of color, the crap games, the hot pastrami sandwiches from the 5th Avenue Delicatessen-- more than all this there were always pretty girls, drawn to Lenny as by a magnet."²⁹

Golden recalls with amusement:

"We called it the sex maniacs' club."

²⁸ Sam Golden Interview, 1991.

²⁹ A quote from Jack Levine on the occasion of a presentation at a National Art Materials Trade Association (NAMTA) annual convention, May 1974 cited in "Leonard Bocour Named to NAMTA Hall of Fame", *Art Material Trade News*, reprint from June 1974, n.p. Bocour Papers, AAA.

The subsequent development of Bocour Artist Colors was marked by these sociable contacts with artists during the early years of the paintmaking studio on 15th Street. Throughout his life Bocour never ceased making friends with artists, attending openings and corresponding with them about their work.³⁰

Becoming a Viable Business: the Impact of Craft Products

During the war the U.S. economy started to recover from the Depression and middle-class collectors began to buy art. Demands for art and craft materials increased as well. After the war Bocour decided he should become a more serious businessman in order to try to make more money. This decision to concentrate on business and to abandon his aspirations of becoming an artist represents a significant transition in Bocour's discourse about his identity. After a dozen years as a paintmaker specializing in hand-ground artists' colours, Bocour faced the fact that, though he loved art and artists, his future was as an entrepreneur, not a painter:

"It was kind of a romantic idea, this artist thing -- the paint for artists. . . I don't know what it was. And certainly there was no money in it. I enjoyed the life. It wasn't until after the War that I decided . . . You know, it's very difficult to make up your mind about something. . . Now either you're in business or you're kidding yourself."

The decision to try to transform the small paintmaking operation into a profitable business was not an easy one in his recollection:

"I wrestled with myself for many years. The idea of becoming a businessman was most repelling. I was handicapped by the adolescent idea that anyone who works merely for money is wasting his life. The big dream of all artists is to live, sooner or later, from the sale of their paintings. This was a bit utopian. I was poor, all my friends were poor. I knew that to stay alive I had to sell more

³⁰. His correspondence with artists reveals warm relationships with both unknown and prominent figures in painting. Sometimes the correspondence was related to gifts of paint, for example to Oskar Kokoschka. But often it concerned the artists' work. He had an affectionate, though very decorous correspondence with Helen Frankenthaler whose work he particularly admired. She wrote to him in 1988 "Dear Lenny, You really "get" me and my work! And your fan notes give me a wonderful feeling: I'm grateful to you for writing and for telling me what my work "means" and means to you!. Hugs. The Bronze Screens took a lot out of me -- 5 1/2 years and I'm proud of them." Letter to L. Bocour from H. Frankenthaler, 9 April 1988. Bocour Papers, AAA.

paint."³¹

He continued to paint in his leisure time but after the war he gave up trying to make a living from his painting:

"I decided it was hard to be both an artist and a businessman, so I paint now only for pleasure, and so do not consider myself a professional or exhibiting artist."³²

Throughout his life however, he always depicted himself as having tried to become an artist.³³

Golden rejoined him in 1946 in an expanding business which continued to grow for the next two and a half decades. (Golden officially became a partner in the 1950s.) During this period Golden was "the inside man" handling the paint manufacture and managing production. Bocour was "the outside man", meeting with artists, visiting art supply dealers and lecturing to art students about paint.³⁴

Bocour's new commitment to business was of course timely. Post-war prosperity and a heightened interest in art increased the demand for artists' paints in all price ranges. Bocour and Golden started to significantly expand the range of paints they made, manufacturing different grades of artists' oil paints, watercolours, casein and, eventually acrylic resin paints for artists by the late forties.³⁵ The move to more contemporary materials may have been partly motivated by shortages in fine-quality

³¹. Bocour cited in Dusa 1990, p.41.

³². Anonymous. "Leonard Bocour-- Artist and Colorman", *National Art Material Trade News*, November 1958, pp. 20-22.

³³. The stories of his Depression years were told many times in his lectures and interviews. See for example: "Depression-era artist paints himself a bright future", *Sunday Journal-News*, Rockland County, N.Y., March 27, 1977, p. 1C, 9C; and Crosby, Denise. "Pioneer in acrylic paint industry is artist at heart", *The Sunday Journal*, Kankakee, Ill., October 6, 1985, p. 34; Gollin, Jane. "New Media Inspire Artists", *Art Voices* Volume 4, Number 3, Summer 1965, pp. 48-50; "The Story of Bocour Artist Colors Incorporated", reprinted from the *15th Anniversary Banquet Program*, New York: Art Material Club Inc., November 3, 1962, pp. 20-21, Bocour Papers, AAA; "Bocour Artists Colors is 50 This Month", reprint from *Art Material Trade News*, February 1982, Bocour Papers, AAA.

³⁴. Interview with Tom Golden by Jan Marontate June 1991.

³⁵. The exact date for the introduction of the acrylic resin paint Magna is uncertain. Bocour claimed different dates at different times, settling on 1947 or 1948 in later accounts. The first advertisements found for the brand in national art magazine were in *American Artist*, March 1953, p. 1; and *Arts Digest*, March 1953, p. 68. Dating problems will be discussed in more detail later.

supplies from European sources who were still recovering from the war, but appears primarily to have been a response to specific requests from artists according to their accounts. Bocour and Golden recalled that they could not keep up with the demand for white and for gesso to prepare canvas. They began to mechanize the paintmaking operation, first with the acquisition of a coconut crusher to grind colors. Later Golden worked with a tool and die maker in a barn outside the city to design custom machines suited to the needs of artists' paintmaking.³⁶ They gave the machine-made oils a different name (Bellini) to allow connoisseurs of their products to distinguish them from the top quality hand-ground line of oils intended for professionals as opposed to students and amateurs. Some of the innovations they made were simply marketing and packaging ideas which responded to changing artistic practices. Bocour was particularly proud of his leadership in producing pound-size tubes to accommodate the increased consumption of abstract expressionist artists painting large-scale works in heavy impasto. He recalled that:

"after the war, scale took off in painting. Like, if you went to art school you did a 12x16, or 16x20, or 18x24 -- a big canvas. So, a painting 3 feet by 5 feet was a small canvas. Not only was there larger scale but thick painting. I used to get complaints: one guy said, "Oh Lennie, I can't afford your paint any more." And I'll never forget, this fellow made a wonderful gesture, like he's squeezing a tube of paint: "you go like this and it's a dollar!"³⁷

In addition to their regular lines of paint, the paintmakers made special custom orders for artists. They also made paint for other labels, like the large Department stores, Macy's and Gimbel's. Occasionally they picked up work supplying paints for hobby kits.

³⁶. The dates for mechanization of the production are uncertain. According to Bocour the paints were all hand-ground until 1952, however he also claims that he purchased his first mill before his marriage to Carole Wheeler who he wed in 1947. Bocour and Cummings Interview 1978, p. 25. *New York Times*, March 18, 1947, 33:3. According to Golden they first used the mill to make gesso, therefore Bocour's two statements may not be contradictory since the paint may still have been hand-ground after the acquisition of the mill. By the early 1950s they appear to have been making at least three different qualities of oil paints for artists. The Bellini brand name was coined for the machine-ground paints. Bocour and Cummings Interview 1978, p. 32.

³⁷. Bocour and Cummings Interview 1978. p. 32-33.

The most remarkable event economically for the future of the business came unexpectedly from one of the hobby kits. In 1954, the paintmakers had supplied small pots of paint for "paint-by-numbers" sets. These sets were painting kits consisting of a drawing on a piece of canvasboard, pots of oil paint and a paintbrush. The stenciled drawing divided the surface of the canvas into small patches which were labelled with numbers. Corresponding to each number was a pot of paint. The idea was to colour in the patches to produce a painting, often an image of a landscape or still life. Technical problems in keeping the paints moist until they were used had plagued some of the early manufacturers of the kits. Golden developed a way of keeping the paints from drying out. The "paint-by-number" kits became very popular quite suddenly. In one account of the phenomenal success of the paints made for these kits, Golden's son Tom recalled that Golden and Bocour had closed the paintmaking studio for the 1954 Christmas holidays. When they returned in January sacks of mail from the post office awaited them, full of orders from large toy manufacturers eager to keep up with the demand.³⁸ The paintmakers made a great deal of money very quickly supplying paint for the kits. In Sam Golden's words:

"it was like an oil well. I was making paint for about ten different outfits."³⁹

Golden explained that they had no significant competition from other artists' paintmakers in this area because the larger paintmaking companies expected this would be a short-lived fad and did not want to bother with it. Yet, the vogue for these craft kits lasted long enough to give the partners financial security and funding to pursue development of their fine art paints.

The company did not advertise its connections to the craft trade, although it used profits from this activity to subsidize work on innovative products for artists

³⁸. Tom Golden Interview, June 1991, Tape 1.

³⁹. Sam Golden Interview 1991 Tape 1.

working in high-culture idioms.⁴⁰ Later, paint-by-number paintings became collectors' items for amateurs of pop-kitsch, however during the 1950s and early 1960s they were a fad for low-brow hobbyists.⁴¹ Bocour preferred to stress the fine-art connections of his company, maintaining that the success of the business was due to his ability to anticipate artists' needs because he himself had started out as a "starving artist". Indeed, regardless of the important share that crafts products had in making Bocour Artist Colors a successful business economically, the company is best known for its contributions to high culture forms of painting at mid-century due to its pioneering work in the development of synthetic media using artists' quality pigments.

The Development and Early Reception of the First Acrylic Resin Artists' Colours

Bocour and Golden worked to produce paints that responded to the preoccupations of their customers and it was an artist that first brought synthetic media to their attention. Artists made many special requests for custom paints from the beginning, often involving fairly simple adjustments: for example, they might ask for a very thick paint or a thin one or a special hue.⁴² On one occasion an artist brought them "a jar of liquid that looked very much like honey, thick and viscous."⁴³ Asked to

⁴⁰. The company produced other craft products, such as colors for fabric painting and Bocour even later established a line called "Bocour Decorative Arts" which was "marketed in the craft field" by Plaid Enterprises, Inc. "Sales Agency and Marketing Agreement", December 14, 1977. Bocour Decorative Arts folder. Bocour Papers. AAA.

⁴¹. The idea for the first paint-by-number kit has been attributed to Richard Hess. At the age of 18 he apparently created the kit for the Palmer Paint Company of Troy Michigan in 1952. Michael O'Donoghue, a prominent television screenwriter, celebrated the 40th Anniversary of "Paint-by-Number Sets with an exhibition drawn from his large collection held at the Bridgewater/Lustberg Gallery in New York City in 1992. "Revival for Old-Style Pop Art", *New York Times "Style Section"*, Sunday, April 26, 1992, p. 47; and telephone conversation with Paul Bridgewater, May 13, 1994 and with the Palmer Paint Company, April 1994.

⁴². Morris Louis' relationship with the paintmakers is well-documented and will be discussed below. Not all of their attempts to please their clients succeeded however. Philip Guston hated the thick paint they made especially for him. The point here is however that the paintmakers did try to produce materials suited to the preoccupations of artists.

⁴³. Letter from Leonard Bocour to Diane Upright 21 September 1972, quoted in Upright, Diane. "The Technique of Morris Louis", *Morris Louis: The Complete Paintings*, New York: Abrams, 1985, p. 49.

make it into a pigmented paint the paintmakers first tried to work with the resin using the techniques they had learned for oil paints and mixed up a batch of white⁴⁴:

"And we put the white out on the table and we began to mull it around and it was like rubber cement. It was like putty. It didn't brush. But when you put it alongside the oil white, and the oil white looked quite yellow."⁴⁵

Although very sticky and difficult to handle, this "goo" (as Golden later characterized it) dried very clear, perfectly preserving the hue of the pigment.⁴⁶ The "goo" was identified by their artist-friend as an "acrylic".⁴⁷ The paintmakers were fascinated by the possibility of using the new synthetic medium to make artists' colours because of the clarity of the medium:

"The thing that got me was the white, the white was so startlingly white. In fact, we used to make jokes about it, called it "jet white", you know, like jet black."⁴⁸

However Bocour and Golden did not begin developing the new paint immediately.⁴⁹ It was not until after the war that they started to investigate the possibilities of using synthetic media to make artists' paints. They rapidly found the

⁴⁴. The story of the artist bringing a pot of acrylic resin to the paintmakers was told and retold many times and there are some variations which occurred in the telling. In particular the name of the artist varies. Bocour mentioned the name "Tony" in one interview but generally did not identify the artist in his retelling of the events. Golden maintained the sample was brought to them by Michael Lenson, a painter who had worked on many New Deal mural projects and who might have had contact with research being carried out on new media by the Federal art project. In the only oral history interview on this period found of Michael Lenson, the painter does not mention this event. Bocour and Cummings Interview 1978, p. 34; Interview with Michael Lenson by Harlan Phillips, October 30, 1964; AAA; and Interview with Sam Golden by Jan Marontate, May 1991.

⁴⁵. Bocour, Leonard. "Paint, Painting and Painters", unpublished transcript of lecture given at the University of San Francisco, February 7, 1985. Bocour Papers courtesy Mrs. Ruth Bocour, New York City., p. 7.

⁴⁶. Sam Golden 1991, Tape 1.

⁴⁷. It was probably a methacrylate ester polymer (an acrylic resin).

⁴⁸. Bocour and Cummings Interview 1978, p. 38.

⁴⁹. Both paintmakers initially recollected that this first experience of trying to incorporate pigment into acrylic took place before World War II, and recalled that their delay in pursuing investigations of synthetic media had been due to the war, although Bocour later said it could have been after the war. As we discuss in the section on art conservation Rutherford Gettens had begun to experiment with polymers for coating frescos in the early 1930s. The first U.S.-produced acrylic product trademark, Plexigum, was registered by Rohm and Haas in 1929. Rohm and Haas began producing Acryloids for inks and coatings in 1934. Hochheiser, Sheldon. "Appendix B: Rohm and Haas Company Trademarks", *Rohm and Haas. History of a Chemical Company*. Philadelphia: University of Pennsylvania Press, 1986, pp. 215-220.

properties of the new media unsuited to the traditional formulas they were accustomed to using. They searched for a supplier to help them contacting advertisers in paint journals, and according to Golden

"it took me two years to find a company like Rohm and Haas. . . everybody has a cure-all . . . but it's not for artists' use."⁵⁰

Bocour visited the Rohm and Haas Company in Philadelphia for help in developing a formula for artists' paints:

"After the War I went down to Rohm and Haas --- they make the acrylics, they're the biggest supplier. I told them what I wanted to do, I wanted something compatible with linseed oil because I knew artists were using it. And . . . they were very helpful to me. They came out with this paint."⁵¹

The chemical company worked with them to adapt formulas suited to the special needs of artists.⁵² Bocour recalled :

"I . . . met the director of their research and development. He was very sympathetic. . . A young chemist was assigned to help me. Since we were all oil-trained, I wanted a resin that would be miscible with oil. I did not want a resin that would require special training in its use. It took quite a while to formulate 36 colors. By 1947 we were ready to go."⁵³

The new paint produced with this resin was called Magna.⁵⁴ It was compatible with oil and could be thinned by adding more acrylic medium and turpentine or other solvents. At first it was a thin, soupy mixture.

The close contacts between the paintmakers and artists made them aware of qualities of paint sought by artists. Bocour gave samples of the new paint to artists

⁵⁰. Sam Golden 1991, tape #5.

⁵¹. Bocour and Cummings Interview 1978. Tape 2. Side 1. Transcript p. 35

⁵². Accounts by Bocour and Golden of Rohm and Haas's involvement in developing the formulas for acrylics may in fact be referring to the water-borne acrylic emulsion paints they developed later. Other testimony by Golden indicates that the earliest supplier of acrylics was a firm named Morningstar Paisley which was later purchased by Warner's. Sam Golden 1991, tape#1 and tape #5.

⁵³. Busa 1990, p. 43. Although Bocour claims the paint was first produced in 1947,

⁵⁴. Magna colors consisted basically of a pigment, an acrylic resin vehicle and thinner. According to Rudenstine : "The acrylic resin used is a methacrylate ester polymer, Rohm and Haas Acryloid F-10 (40% resin solids in mineral thinner and Amsco F at a ratio of 9 to 1). The thinner used is turpentine. Magna colors are oil-compatible paints." Amsco F is an aromatic solvent which was made by American Mineral Spirits Company. Rudenstine, Angelica. "Morris Louis' Medium", in *Morris Louis*, Boston: Museum of Fine Arts, 1967, p. 79.

asking for their comments. According to him Barnett Newman, Ad Reinhardt, Jackson Pollock, and Morris Louis were early users who responded favorably to the handling characteristics of the early version of the formula for Magna.⁵⁵ But some artists found the thin, flat quality of the paint unsuitable for their way of working. At mid-century many painters favoured heavy impasto for strongly gestural expressionistic modes. The paintmakers sought to adapt their new paint to this way of working, making it thicker by adding beeswax and other products. Another feature of Magna was that it was "reversible", that is it could be redissolved in solvent after drying. This was an advantage for conservators, who sought a removable pigmented paint for inpainting in restoration work. Magna became very popular with paintings conservators.⁵⁶ But some artists found this reversibility annoying. To counteract this effect Golden developed a coating to isolate the different layers for painters who wanted to rework the surface with successive coats.⁵⁷ Another quality of the medium was that the paint "took to illustration board and paper without leaving the messy rings that oil does"; this was of interest for painters who were working on raw canvas.⁵⁸ In addition, the acrylic paint could be applied directly to raw canvas without affecting the longevity of the fibers, whereas oil paints applied to unprimed canvas tended to hasten rotting.

Bocour explained the importance of understanding artistic practices to the

⁵⁵ Upright 1985, p. 50.

⁵⁶ By the 1990s, Magna was no longer being manufactured and conservators began to contact Bocour and art dealers to find old stock. Conservator Margaret Watherston wrote to Bocour suggesting he arrange to have it manufactured again: "We love Magna for retouching and . . . I was getting very nervous about our supply of colors. . . I wonder if you could interest a company that makes materials for conservation in preparing small quantities of Magna color. Of course, used in restoration, it lasts forever so I suppose it wouldn't be worth their while. We will all just have to learn to grind our own." Letter from M. Watherston to L. Bocour, May 7, 1993. Bocour Papers, AAA.

⁵⁷ F-10 and B-67 were the chemicals in the varnish Soluvar used to fix many of the early works done in Magna before subsequent research by conservator Robert Feller pointed to problems with the physical chemistry (cross-linking) as these materials aged. See the second section in Chapter 5 on the Center for Research on Materials of the Artist and Conservation at the Mellon Institute in Philadelphia. Mark Golden Interview 1991, Tape #4.

⁵⁸ Letter from Leonard Bocour to José Gutiérrez and Nicholas Roukes cited in Gutiérrez and Roukes, 1966, p. 26.

development of the new paint:

"You see I'm not a chemist by early training, but rather much more interested in art. [The chemists at Rohm and Haas] were very helpful. But they had no idea what I wanted. I wanted something with viscosity, something that could simulate oil. And they thought in terms of house paint, something that was very loose and liquidy and very, very flat. However, with a few trips they did help me and I did have a paint that was very, very good, you know that was really what I wanted."⁵⁹

Bocour and Golden modified the basic formula developed by Rohm and Haas to give Magna more body in order to approximate the handling characteristics of traditional artists' oils. According to Golden, it was a struggle to adapt the formulas developed for commercial use to correspond to artists' requirements at the time:

"You have to understand that nothing, nothing to this day is made for artists' use in chemical houses. Chemical houses make a house paint. They want the darn brush to go into the can and . . . [not] show a brush mark. . . [They want the paint to] smooth out and cover good. Nothing is made for artists' materials. You've got to fight to bring in body to the paint, to give a little feel so the brush marks will show."⁶⁰

Some of the early users, preferred the earlier thin version which the paintmakers continued to produce by special order for artists, notably for Morris Louis into the 1960s.

Although Bocour and Golden maintained that Magna was first produced around 1947, it does not appear to have been distributed on a wide scale until about 1953.⁶¹ Golden explained that they did not try to patent their formulas because they wanted to keep their innovations a secret from other paintmakers:

"You see once you patent something you've got to tell them what it is. So [your competitors] change it around a little bit and they have the same thing. . . "⁶²

They began to advertise Magna as "the first new artist's paint in 500 years", comparing their innovation to the "re-discovery by the Van Eyck brothers of oil

⁵⁹. Bocour Interview 1985, p. 6.

⁶⁰. Binders such as beeswax were added to keep the pigment in suspension. Golden 1991.

⁶¹. Bocour Interview 1985, p. 9.

⁶². Sam Golden Interview 1991, tape#5.

painting" during the Northern Renaissance.⁶³ (See Figure 4.) Furthermore they became convinced that synthetic resins were superior to natural resins because "when they age they don't discolor-- according to scientific tests."⁶⁴ Touted as permanent, fast-drying, versatile, brilliant and intense they first called it a "plastic paint". The paintmakers later said that using the terms "synthetic" and "plastic" was "like the kiss of death". Although some artists were keen to try anything new, other more conservative customers associated the terms with artificiality, phoney imitations and cheap substitutes.

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 "the resistance was enormous. . . the word acrylic now is in the language. There's nothing strange about it, it's not foreign . . . [but at first] artists would say "Acrylic -- what's that?" I'd say, "It's a synthetic resin." "Oh, I don't want that shit, I want the real stuff." And I handed out, literally hundreds of sets. . . .

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In Golden's recollections, Magna was never a huge success economically for the company.⁶⁷ The oil and turpentine compatible paints were too difficult to handle for most amateur painters who constituted a large portion of art materials consumers. Conservators and some highly-regarded artists did however become devoted users.⁶⁸

⁶³. This theme was repeated in trade literature and advertisements distributed by Bocour Artists' Colors beginning about 1957, for example the brochure *Discover Magna*, Bocour Papers, AAA. The earliest advertisement we have located in a mass art magazine is also headed "Discover Magna. Plastic Artist Paint". *American Artist*, March 1953, p. 1; and *Arts Digest*, March 1953, p. 68.

⁶⁴. Chaet, Bernard. "Studio Talk. The Permanent Palette: Interview with Leonard Bocour", *Arts*, February 1958, p. 62.

⁶⁵. Sam Golden Interview 1991, tape#1.

⁶⁶. Sets consisted of twelve small tubes.

⁶⁷. Sales figures have only been located for 1971-72 and indeed at this point sales of Magna only amounted to US\$ 5,694 as compared to the best-selling Bocour product, the acrylic emulsion paint Aqua-Tec with sales of US\$441,614.00 of total sales of around one million dollars a year according to a report prepared by Swidler and Company, Certified Public Accountants. Letter from Z. Swidler of New York City to Joseph Dixon Crucible Co. of Jersey City, November 17, 1972. Miscellaneous Correspondence Folder, Bocour Papers, AAA.

⁶⁸. When production of Magna stopped in the 1980s artists and conservators began buying up remaining stock and contacting Bocour. Conservator Margaret Watherston wrote to Bocour of her difficulties obtaining it "To my great surprise, New York Central said that they had a few tubes of Magna colors left. Last Saturday, I swooped down on them and acquired a great treasure (6 one pound tubes of Magna White). Being a noble soul, I left one tube for someone else". Letter from M. Watherston to L. Bocour, May 7, 1993. Letter from conservator Louis Pommerantz to L. Bocour, May 13, 1985. Bocour Papers, AAA.

The development of Magna, the first artists' acrylic resin paint, established the reputation of Bocour Artist Colors. The company became known as a innovator in the high culture art world of critics and connoisseurs who saw in the work of several prominent users of the paint a symbiosis of material and form. In the 1950s artists associated with "post-painterly abstraction" and "color field painting" found Magna suited to the types of problems they were exploring in their work, in particular, Morris Louis, Ken Noland, Helen Frankenthaler, Barnett Newman and Frank Stella as did other artists such as pop artists Roy Lichtenstein.⁶⁹ Testimony on the use of new synthetic media by artists will be explored in more depth in Chapter 8 but the well-known collaboration of the paintmakers with artist Morris Louis will be discussed here briefly because Louis' mature work has been very closely associated with his use of the acrylic resin produced by Bocour and Golden (Magna). The discourse on Louis' painting done with Magna introduces an important dimension to the study of the impact of synthetic paints by bringing into focus links between the new media and formalist concerns in American painting at mid-century.

Morris Louis' Colour Field Painting and Bocour's Synthetic Paint

Morris Louis, Kenneth Noland and Helen Frankenthaler are important figures in the avant-garde reaction to abstract expressionism and action painting in the 1950s and 1960s. They developed a new approach to non-objective painting using bright hues and stained canvases which came to be known as Color Field Painting.⁷⁰ The technique of

⁶⁹ Some, like Lichtenstein and Stella even continued to use Magna after Bocour stopped producing it. In late 1983, upon notification by art supply dealer Lou Rosenthal that Magna would be discontinued, artist Frank Stella purchased most of the pint-sized Magna paints in stock at New York Central Art Supply, one of the major art supply stores in Manhattan. After a 40% discount the bill was \$7000. "Miscellaneous Supplies, 1984". Frank Stella Papers, AAA. Interview with Roy Lichtenstein by Jan Marontate, February 1994.

⁷⁰ The technique of staining refers to the application of paint on raw, unprimed canvas. sometimes lightly primed canvas was also used. Usually the canvas was placed in a horizontal position and often it was unstretched during application of the paint. The fabric absorbs the paint, producing a stained effect. The texture of the fabric remains visible in the coloured areas allowing for the incorporation of

Louis and his close colleague Kenneth Noland (b. 1924) exploited the characteristics of the new acrylic resin paints developed by Bocour and Golden, notably the intense colours and suitability for staining techniques.⁷¹

The itinerary of Morris Louis (born Morris Louis Bernstein, 1912-1962) brought him into contact with early experiments in the use of synthetic paints in art. He studied art in Baltimore before moving to New York City in 1936 where worked in New Deal art projects. He participated in Siqueiros' experimental workshop in 1936 using Duco (pyroxylin enamels) and found the workshop important enough to mention it in his *Curriculum vitae* even 20 years later.⁷² In 1940 Louis left New York City to live in Baltimore and Washington but remained in touch with some of his contacts in New York, among them paintmakers Bocour and Golden. He purportedly began using the acrylic resin paint Magna around 1947 or 1948 after being given a sample by Bocour.⁷³ Magna was the only medium he used from 1954 and the only acrylic paint that he ever used.⁷⁴ Speaking of Louis' use of Magna, Bocour later recalled :

"A lot of fellows said "I tried it and it's no good." Morris [Louis] on the other

unstained and stained areas in the painting. Artists' oil paints often left an oily halo around the pigmented areas, took a long time to dry and caused the untreated canvas to deteriorate. Acrylic resin paints did not.

⁷¹. Discussions of the links between acrylic artists' paints and treatment of colour occasionally fail to realize the significant differences between the oil-compatible acrylic resins and the later water-borne systems developed using acrylic emulsions. Gage confounds the two types of artists' acrylic paints in his discussion of Louis and Noland's use of Bocour colours. Gage, John. "Art Materials and Abstraction," in "Chapter 14: Colour Without Theory: The Role of Abstraction", *Colour and Culture. Practice and Meaning from Antiquity to Abstraction*. London: Thames and Hudson, 1993, p. 267.

⁷². "Biography" folder, Morris Louis Papers, Box 1, AAA. [Note the Morris Louis Papers and the Morris Louis Estate Papers are two distinct sets of documents in the Archives of American Art. The later may only be consulted with special written permission from his widow which was obtained by the author in 1993. Letter from Mrs. Brenner's lawyer Ann M. Garfinkle to Jan Marontate, November 24, 1993.]

⁷³. Art historian, curator and dealer, Diane Upright gave particular attention to Morris Louis' paints. It was Bocour who arranged her introduction to Louis' widow. Upright, Diane Headley. "The Technique of Morris Louis", in Upright *Morris Louis. The Complete Paintings*. New York: Abrams, 1985, p. 50. See also the letter of introduction Upright wrote to Brenner on February 14, 1974. Morris Louis Estate Papers, AAA.

⁷⁴. Upright, 1985, pp. 49-58.

hand tried it and he found himself. And he said, 'Part of my thesis is that materials influence form'."75

In fact, Louis' discovery of the potential of acrylic resin for his painting involved a complex process of negotiation and interpretation. Fellow-painters, critics, curators and collectors participated in the insertion of Louis' work into battles over the future of painting that were raging during the 1950s. Critic Clement Greenberg became a powerful partisan of the new way of painting which emerged with Louis' early work in synthetic media. The assessment of Louis' contribution to art was hastened by his death only a few years after he had begun to develop his mature style.

In Washington Louis became an art instructor at the Washington Workshop Center at around the time he met painter Kenneth Noland. In 1953 the two teaching colleagues visited New York City for the weekend. Noland introduced him to critic Clement Greenberg who took them to visit the studio of Helen Frankenthaler where they saw her painting *Mountains and Sea*, a large stained canvas. *Mountains and Sea* had a profound effect on the subsequent course of Louis' work, prompting him to destroy most of his recent paintings and embark on a new direction. His new way of working eliminated painterly surfaces and the gestural quality associated with the work of abstract expressionists like Pollock.⁷⁶ Instead Louis and Noland began to work in thin layers of richly nuanced intense hues which were close in value and tone. (See Figures 11 and 12.) According to art historian Kenworth Moffett

"Frankenthaler was using Grumbacher student grade colors, oil paint thinned with turpentine, and occasionally, commercial enamel paint, such as Pollock had also used. In 1953, Louis and Noland began working with all of these materials. Louis, who knew Bocour, was the first to use Magna, and Noland soon followed suit."⁷⁷

In 1954 Louis produced a series called *Veils* all done with Magna. Greenberg's

75. Bocour and Cummings Interview 1978, p. 35.

76. Elderfield, John. *Morris Louis*. Exhibition Catalogue, October 6, 1986-January 4, 1987. New York: Museum of Modern Art, 1986. Especially pp. 27-31.

77. Moffett, Kenworth. *Kenneth Noland*. New York: Abrams, 1977, p.101.

interpretation of the paintings stressed the centrality of Louis' innovative "facture", his way of making the painting which stressed the optical qualities of the materials:

"The crucial revelation he got from Pollock and Frankenthaler had to do with facture as much as anything else. The more closely colour could be identified with its ground, the freer would it be from the interference of tactile associations; the way to achieve this closer identification was by adapting water-colour technique to oil and using the thin paint on an absorbent surface. Louis spills his paint on unsized and unprimed cotton duck canvas, leaving the pigment almost everywhere thin enough. . . for the eye to sense the threadedness and wovenness of the fabric underneath. But "underneath" is the wrong word. The fabric, being soaked in paint rather than merely covered by it, becomes paint in itself, colour in itself. . . The effect conveys a sense not only of colour as somehow disembodied, and therefore more purely optical, but also of colour as a thing that opens and expands the picture plane."⁷⁸

In the beginning Louis used Magna as it was produced by Bocour Artist Colours, diluting it with a synthetic medium made by the Rohm and Haas Chemical Company and turpentine.⁷⁹ However, new formulas developed for Magna in tubes had a paste-like consistency because of the addition of beeswax. Louis kept extensive records of his art supply purchases from the 1950s until his death. He wrote frequently to Bocour requesting materials and commenting on the quality of the paints. For example, in 1960, Louis asked Bocour to have Golden produce a thinner, more finely-ground preparation in larger quantities. Bocour's shop produced gallon cans of paint in special orders for Louis and Noland.⁸⁰ After 1960, Louis stopped mixing his colors, using the specially ordered hues straight from the can. The striking intensity of later

⁷⁸. Greenberg, Clement. "Louis and Noland", *Art International*. Vol. IV/5, May 25, 1960, p. 28. (pp. 26-29 for bibliography).

⁷⁹. The medium was Acryloid F-10. The receipts and portions of his correspondence with suppliers are in the Morris Louis Papers, AAA.

⁸⁰. He was particularly perturbed by the quality of the grinding (since coarsely ground paint produced unwanted effects), the freshness of the preparation (given that the pigment tended to settle out of the medium) and contamination with other pigments (since later in his career he used the paints directly from the containers without mixing them). Conservators have found that the granular surface of some of his canvases is due to a combination of factors: grains of pigment floated to the surface when large amounts turpentines were used without enough medium, an effect exaggerated by coarsely-ground colors (which he complained vehemently about in notes to Bocour). These effects were on occasion exaggerated by the use of prepared canvas which resisted absorption. Morris Louis Papers and Golden 1991. See also Upright 1985, p. 56, Rudenstine 1967, p. 79.

works like the series known as *Unfurleds* highlights the transparency of the acrylic medium, which is as transparent as all but the highest grades of optical glass.⁸¹

Yet their techniques are not merely straightforward applications of the properties of the new materials. In particular, Louis' techniques of pouring the paint onto huge canvases (at least by the standards of the period) betray a remarkable mastery of the medium, which transcend routine expectations of its handling.⁸² It is extremely difficult to maintain control over areas of saturation in such large canvases. Bocour and Golden tried to imitate Louis' deceptively simple-looking technique and despite considerable effort, the paintmakers were unable to duplicate the effects Louis achieved.⁸³

In the work of Morris Louis, critical reception stressed the symbiosis between the properties of the medium and the characteristics of his manner of working. Louis' medium (and the related techniques of application he developed) has been deemed crucial for creating the conditions which allowed him to emerge as a leading innovator. His work was seen as both a refutation of abstract expressionism and a bridge between it and later forms of abstraction. However, discourse about Louis' practices do not claim that acrylic paint determined his stylistic evolution, but rather that the synthetic media provided him with new possibilities to explore in his art. Furthermore, Louis's involvement in the process of determining the characteristics of his materials -- through his special specifications to manufacturers and suppliers -- illustrates the involvement of artists in the conception of new materials. Bocour and Golden discussed their paints with other artists too, among them Louis' close colleague Noland whose views on the

⁸¹. In addition the paint bleeds into the cloth and does not leave a yellow oil stain. On the optical qualities of the resin see: Gettens, Rutherford J. and George L. Stout. "Preface to the Original Edition", *Painting Materials. A Short Encyclopedia*, New York: Dover (1966 reprint of 1942 publication), p. 3.

⁸². The size of his paintings was cited in correspondence with critic Clement Greenberg as a hindrance for some collectors, often ranging to around 250 x 400 cm. Letter to Morris Louis from Clement Greenberg, May 3, 1961. "Box 1: Correspondence-1961", Morris Louis Paper, AAA.

⁸³. Upright 1985, p. 57 and Bocour and Cummings Interview 1978.

place of the new paints in his art are presented in Chapter 8.

The Paintmakers' Experiments and Other New Media

The critical success of work by Louis, Noland and other early users of the acrylic resin paints made by Bocour Artist Colors may well have contributed to the increased interest in new media by other paintmakers. Bocour and Golden themselves continued to experiment with new chemical products, in part because of the increased demand for synthetic paints, particularly water-borne systems being developed by their competitors in the 1950s and 1960s.

In the early days of making synthetic paints for artists much of the discovery process was trial and error. Neither Bocour nor Golden had scientific training. Their procedures for studying the new materials were, like those of Gutiérrez, intuitive rather than scientific at first. Asked about how he developed the new paints and innovative new products for use with acrylics (like mediums and modeling paste) Golden characterized his methods as follows:

"It has been a fight all the way down the line. You keep trying. I was never a chemist. Never claimed to be a chemist. So I stayed up nights, [wondering] "How to do it. How do you do it?". . . You just stay up nights. Hit and miss. . . I tried different [things]. I made paint with honey. I made paint with dioxin. I made paint with asbestos. I made paint with -- you name it and I'm still alive [knocks wooden table twice with fist]. Lucky. And you try. I mean . . . when there's no information, you can't go to the library and pick up a book on acrylics. . . Edison didn't find out how to make a light bulb -- you had to experiment, you had to play with it, and come up with something that you felt was good. Now the acrylics-- to this day, it's called Magna the one we made-- had its drawbacks. But a lotta guys used it and loved it."⁸⁴

Some of Golden's early experiments went dramatically wrong. For example he tried to use aluminum tubes due to post-war shortages and they exploded (because of gas produced in chemical reactions with the paint). He almost burned down the factory experimenting with polyester resin. Although the company did send paint samples out

⁸⁴. Sam Golden 1991, tape #1.

for testing.⁸⁵ Golden also conducted his own weathering tests, painting his home and even his car bumper bright colours to test new pigments and the acrylic medium.⁸⁶

During the 1950s the paintmakers continued to modify the formulas for many of their paints taking into account new pigments. They tried a variety of other new synthetic media.⁸⁷ Eventually, in the early 1960s, they produced a line of water-borne acrylics which they called Aqua-Tec. Here too the exact date is difficult to establish.⁸⁸ They had considerable difficulty developing these paints, in part because of poor quality control by suppliers of their raw materials, but with the assistance of a technical representative from Rohm and Haas they solved their formulation problems.⁸⁹

Although Bocour and Golden were not first to produce water-borne synthetic paints for artists, they did make some innovations with this type of paint for artists, notably in response to a request from painter Helen Frankenthaler (b.1928).⁹⁰ Frankenthaler had begun to move away from thin staining (which left a fuzzy edge where the paint stopped bleeding into the canvas) to a harder edge and began to use water-borne acrylic paints at the end of 1962 but "did not like it and went back to oil,

⁸⁵ They sent products to Gimbels Bureau of Standards in Philadelphia in the early 1950s and later they also used the U.S. Testing Laboratories. See for example, Survey B-1267 by Gimbels Bureau of Standards, December 21, 1951 in "Tests and Standards" folder, Bocour Papers, AAA.

⁸⁶ Golden's son Tom recalled the unconventional experience of being a teenager living in a brightly painted cobalt blue house located in a conservative Hillsdale suburb during the 1950s. Tom Golden Interview 1991.

⁸⁷ These included a polyester resin made by Du Pont. Sam Golden Interview 1991, tape #6.

⁸⁸ Using advertisements to date the introduction of the new materials, they would appear to have been scheduled for distribution around 1963-4. None of the key informants was able to supply an exact date for actual production.

⁸⁹ They were used products made by a company called "Morningstar Paisley" but changes in the production due to transfer of operations to a different plant resulted in failure of the formulas they were using. An agent by the name of Ed Lamy (phonetic spelling) proved helpful to them and also worked with other paintmakers at this time. Efforts to locate Lamy through the Rohm and Haas Company have proven unsuccessful to date. The formulas used AC-33, a product developed by Rohm and Haas. Sam Golden Interview 1991. Hayes Interview 1994. Ruth Bocour Interview 1995.

⁹⁰ Henry Levison, head of Permanent Pigments had produced the first full line of acrylic emulsion paints around 1954. His work is discussed in Chapter 6. By the 1960s, several other companies were also bringing out similar lines of new water-borne paints, mostly based on polymer emulsions as well and they are covered in Chapter 7.

then tried it again and continued using it".⁹¹ She later recalled:

"I changed to acrylics for a number of reasons. One, I was told that they dry faster, which they do, and that they retain their original color, which they do. I would say durability and light and the fact that one can use water instead of turpentine: all that makes it easier given the abstract image. In the way that sound echoes sense, the materials come along that are called for within the nature of the aesthetic. As painting needed less and less drying time, depth, and so forth, the materials came along that made that more obvious."⁹²

She said the quality of the new synthetic paint:

"can be scratchy, tough, modern, once-removed -- not as involved in *métier*, wrist, or medium as is often the case with oil. At its best, it fights the painterliness for me. . ."⁹³

She had difficulty getting the acrylic to absorb into the canvas at first. Bocour told the

story of a new product developed in response to requests from Frankenthaler:

"Helen Frankenthaler is an old old friend and customer . . . [when we began to make] Aqua-Tec I told her about them and she said, "oh send me a quart each of all the paints". . . So, I sent her up a quart of each paint and about two or three days later [she] called me up very angry, very testy, "what kind of junk did you make here, I can't use the paint". I said, "what happened?" [She replied] "It rolls into balls". I said "wet the back of the canvas, use a little more water". No matter what I said . . . every hour on the hour she'd call me to tell me how terrible it was. So finally . . . I went up to her studio. . ."⁹⁴

The paintmakers developed a product to help her do washes or stains which they called WTB (Water Tension Breaker).⁹⁵ By 1963 Frankenthaler was using the tendency of acrylics "to flood laterally across the surface, absorbing less quickly than turpentine-thinned oil" in large open areas of softly modulated paint.⁹⁶ During the 1960s the company also produced other products to use with the paints (synthetic mediums,

⁹¹. Given the date Bocour's acrylics may not have been her first. Elderfield, John. *Helen Frankenthaler*. New York: Abrams, 1989, p. 166.

⁹². Transcript of 1972 filmed interview of Frankenthaler in De Antonio, Emile and Mitch Tuchman. *Painters Painting*. New York: Abbeville Press, 1984, p.82.

⁹³. Frankenthaler quoted in Elderfield 1989, p. 166.

⁹⁴. Bocour 1985, pp. 32-34.

⁹⁵. It was modeled on the oxgall solution used for wash techniques by English watercolourists. Recently, at a Triangle Workshop for artists attended by Golden's representatives, Frankenthaler purportedly jovially chided Golden for failing to share the profits from WTB with her, since it was, after all her idea that generated the product. Mark Golden Interview 1991 (untaped)

⁹⁶. Elderfield 1989, pp. 166-7.

varnishes, retarders, molding pastes and gels).

Bocour's discussions display an ambivalence about the water-borne acrylic emulsion paints, which handled very differently from the artists' oil paints of his art school days. Although he was proud of the company's pioneering work in the development of artists' acrylics, in his later years he began to express his mistrust of synthetic media:

"when we made Aqua-Tec, the polymer emulsion, I painted out post card size slides and sent them out to the U.S. Testing Laboratory . . . so I feel very, very good but in all honesty, these acrylic colors, the resin or emulsion, have not had the test of time. . . "97

Golden on the other hand, after an initial struggle with the new technologies imposed by the modern materials, became an ardent proponent of water-borne acrylic media for artists. Above all he valued their versatility and the speed with which they dried, which he felt gave the artist more creative freedom. In his words:

"You could make acrylics behave as a watercolor. You could make them behave as an oil paint, you could make them be shiny you could make them be matte, you could make them be thin washes. It gives you a whole wide, wide area to work in. Not only that, but it extends your painting life by at least ten years because you can finish a painting. You don't have to wait for it to dry. . . so that the life of the artist, his painting life is extended. . . "98

Bocour Artist Colors Reaches Maturity: Growth of the Company and Involvement in the Art Materials Trade

The paintmakers did not just function in the world of the New York art elite, but endeavored to spread word about their products and to develop markets across the country as their business expanded. The company grew slowly at first, from a two-man operation to a small firm employing only a few workers and a secretary in the 1940s. Bocour and Golden eventually hired more staff, mostly blue-collar labourers who learned the craft of paintmaking on the job. The staff eventually unionized.⁹⁹ The

⁹⁷. Bocour 1985, p. 16.

⁹⁸. Sam Golden 1991 tape#5.

⁹⁹. They joined Local 810 of the Steel Metals, Alloys, Hardware Fabricators and Warehouse Men.

company moved several times (from 15th Street to 16th Street to a factory-loft on 42nd Street and then a larger space on 52nd Street). By the 1970s Bocour had a staff of about 35-40 people and he had also apparently hired at least one chemist.¹⁰⁰ Family members intermittently helped with the business as well, and many pursued careers related to the arts.¹⁰¹ Bocour's wife Ruth who had training in both art and science participated in the development of a new line of acrylic emulsion paints.¹⁰² In the early 1970s they were forced to move again because of re-zoning and the company left Manhattan for a larger building in Garnerville, New York.¹⁰³ The suburban location meant that fewer artists came to visit but many artists were leaving the city as well. During this period new avant-garde stylistic movements from outside New York City emerged (like pattern-painting) and some observers have noted a trend towards

affiliated with the International Brotherhood of Teamsters according to a report prepared by Swidler and Company, Certified Public Accountants. Letter from Z. Swidler of New York City to Joseph Dixon Crucible Co. of Jersey City, November 17, 1972. Bocour Papers. AAA.

¹⁰⁰ Bocour's co-author on an article about the manufacture of acrylic paints for artists, Kenneth Nelson is identified as "chief chemist". Bocour, Leonard and Nelson, Kenneth. "How Acrylics Are Made". *American Artist*, Volume 38, Issue 385, August 1974, pp. 46-49, 67. The number of employees varied slightly, but by the early 1970s the size of the full-time staff had stabilized at about 36 plant workers, 4 office workers and about 2 senior staff members in addition to Bocour and Golden. Bocour and Cummings Interview 1978, p. 37.

¹⁰¹ Golden's sons Tom, Steve and Mark, Bocour's son Peter and step-sons Paul and Chuck Hirsch all pursued careers related to the arts, although only one became a full-time paintmaker. Tom Golden, the eldest of Sam Golden's four children, was an actor for a few years before resuming his studies to become a psychologist. Steven Golden worked for Bocour Artist Colors in the 1960s and later became founded his own business as a colour consultant. Mark Golden founded Golden Artists Colors with his wife Barbara and father Sam. Tom occasionally works for the newer company as well. Interview with Tom Golden June 1991. Peter Bocour is an free-lance artist and designer who has worked for international design companies like Laura Ashley. Paul Hirsch works in the film industry and won an Oscar for his technical contributions to the film "Star Wars". Chuck Hirsch taught film studies at universities in New York and California before becoming a therapist. Interviews with Peter Bocour, December 1993 and Ruth Bocour, 1994-1995.

¹⁰² Ruth Schindler Hirsch Bocour, Bocour's third wife, now retired, was a modern dancer who had studied in New York (under Martha Graham) and in Paris before marrying Leonard Bocour. She also had some University-level training in chemistry. Prior to becoming a dancer she had studied in a pre-medical programme at the University of Pennsylvania, worked as a laboratory assistant at Temple Medical School in Philadelphia and graduated from the University of Pennsylvania in 1934. She had considerable knowledge of art and had made many contacts with artists in New York and Paris during her first marriage to painter Joseph Hirsch. Interviews with Ruth Bocour, December 1993-May 1995.

¹⁰³ Anonymous. "Bocour Goes Bucolic. Artists color factory doubles space in move to Hudson River town". *Art Material Trade News*, September, 1971, p. 20, 42.

geographical decentralization of artists in America.¹⁰⁴ Bocour handled most of the outside contacts, touring the country to give lectures and demonstrations on the paints, and meeting with artists to keep up with the latest trends in contemporary painting. Bocour also authored a number of beginner's instruction manuals for the company during this period.¹⁰⁵

The paintmakers were also involved in organizations concerned with quality control, and business aspects of the art materials trade. Bocour represented the company at meetings on the development of recommended standards for artists oil paints before the war and the company was an acceptor listed in the publication of the first voluntary commercial standard for artists' paints.¹⁰⁶ In 1960 he was made a member of the Standing Committee for the preparation of the revised Commercial Standard of Artists' Oil Paints produced in 1962 and with other art materials manufacturers contributed funds for publication of the standard.¹⁰⁷ As soon as the war ended, the manufacture, distribution and sale of art materials expanded rapidly. New

¹⁰⁴. On the subject of the increasing geographical dispersion of practicing artists and the decreasing importance of New York City see Crane, Diana. *The Transformation of the Avant-Garde. The New York Art World 1940-1985*. Chicago: University of Chicago Press 1987. In a study of census data Judith Blau emphasizes the relatively even distribution of institutions for the fine arts across the country, indicating that the consumption of high-culture art forms is widespread although "art suppliers" tend to be concentrated in larger art communities. Blau, Judith. *The Shape of Culture. A Study of Contemporary Cultural Patterns in the United States*. New York: Cambridge University Press, 1992.

¹⁰⁵. Bocour, Leonard. *Let's Paint. Learn to Paint with Leonard Bocour*. Garnerville, N.Y.: Bocour Artist Colors, Inc. n.d. and Bocour, Leonard. *Let's Draw. Learn to Draw with Leonard Bocour*. Garnerville, N.Y.: Bocour Artist Colors, Inc. n.d.

¹⁰⁶. His name (Leonard Bogdanoff at the time) appears on the list of those present distributed to members of the first standing committee in the "Condensed Record of General Conference on Artists' Oil Paints", Museum of Modern Art, New York City, February 9, 1940 from the office of F.W. Reynolds, National Bureau of Standards, document #TS-2836 in Ralph and Bena Frank Mayer Papers, AAA, reel D213:33-37. See also U.S. Department of Commerce. National Bureau of Standards. *Artists' Oil Paints. Commercial Standard CS98-42*. Washington: U.S. Government Printing Office, May 10, 1942.

¹⁰⁷. Note that the inclusion of synthetic media in the standard was hotly debated at the time. Interview with Joy Turner Luke, May 1996. See also U.S. Department of Commerce. Office of Technical Services. Commodity Standards Division. *Commercial Standard CS98-62. A recorded voluntary standard of the trade published by the U.S. Department of Commerce*. Washington: U.S. Government Printing Office, November 15, 1962.

professional groups were formed by people involved with the manufacture, distribution and sale of art materials. Bocour and Golden joined organizations founded to promote business like the "Chowder Club," a group of manufacturers and wholesalers (which became the Art Materials Club of New York in 1947 and was later renamed the Artists Materials Manufacturers Association).¹⁰⁸ They also became members of the National Art Materials Trade Association (NAMTA) which included dealers as well.¹⁰⁹ Bocour was naturally more outgoing than Golden. He held several elected offices in NAMTA over the years and was named to the NAMTA Hall of Fame in 1974.¹¹⁰ He initiated a series of instructional booklets published by NAMTA for distribution by dealers as part of an educational outreach programme to stimulate amateur interest in painting.¹¹¹

Even though the company became active in voluntary associations related to the art materials trade, Bocour maintained close ties with artists, and art students through his lecturing and art collecting activities. Teaching and lecturing about art became a central feature of his promotional activity for the new media.

Teaching and Lecture Tours

Just after the war Bocour began to teach, first with a course on Technics [sic] and Media at the Brooklyn Museum Art School in 1945, which by 1947 had been renamed "The Bocour Workshop" (presumably to promote his paintmaking company since at this time Bocour was still listed by his birth name Bogdanoff in the school

¹⁰⁸. The 1947 date was given in a facsimile reprint of part of the 15 year Banquet Celebration held in 1962. 1949 is given as the founding date for the Artist Materials Manufacturers Association in "How It Began", *A History of NAMTA. The First 25 years*. Hasbrouck Heights, N.J.: National Art Materials Trade Association, 1975, p. 6.

¹⁰⁹. "1707-National Art Materials Trade Association". *Encyclopedia of Associations*, Part 1 (Sections 1-6) Entries 1-10323, Detroit: Gale Research Inc., 1992, p.1711

¹¹⁰. "Leonard Bocour Named to NAMTA Hall of Fame", reprint from *Art Material Trade News*, June 1974. Bocour Papers, AAA.

¹¹¹. Only one booklet from the series has been located, namely: Folb, Jay. *Start*, Hasbrouck Heights, New Jersey: National Art Materials Trade Association, 1969.

prospectus). In 1946 he joined the faculty of the Skowhegan School of Painting and Sculpture where he taught a summer course on materials and techniques until about

1956. His two-week workshop was called a "paint laboratory":

"in which all the essentials of the artists' craft will be taken up. The students will participate in his demonstrations of the basic principles and methods of color grinding, the preparation of grounds, varnishes, mediums etc., also the preparation of canvas for oils, panels for tempera, types of oils, function of gouache and tempera, and the preservation of pictures."¹¹²

The idea of his courses was not merely mastery the craftsmanship of painting but also economy. The course descriptions promised that "the tubes of paint made by the student will result in a saving many times the amount of the laboratory fee".¹¹³ At Skowhegan he kept in touch with early contacts from the New York art scene and strengthened his ties with many younger artists who were beginning to make a name after the war, like Alex Katz, and Robert Indiana.¹¹⁴ During the 1960s Bocour also taught short summer courses on artists' materials (usually about three weeks) at the Yale summer school in Norfolk. He was appointed for a six-year term to the Board of Visitors in the School of Visual Arts at Boston University in 1977, (a consultative position similar to that of visiting faculty member but without teaching responsibilities).¹¹⁵

Bocour was also a frequent guest speaker in art schools. He travelled extensively lecturing in universities and colleges throughout the U.S. and Canada. He demonstrated painting techniques to studio art classes and gave talks to amateurs of art in clubs and societies, typically speaking at between 100 and 150 different places each

¹¹². *ibid.* p. 8.

¹¹³. Course Description of "17A: The Bocour Workshop. Instructor: Leonard Bogdanoff", *Spring Term 1947. Brooklyn Museum Art School*, n.p.

¹¹⁴. An undated prospectus for the school lists the following faculty and visiting artists for July and August: Henry Varum Poor, Willard W. Cummings, Sidney Simon, Anne Poor, Milton Hebard, Leonard Bocour. (Faculty) and (artists) Yasuo Kuniyoshi, Russell Cowles, William Zorach, Marguerite Zorach, Karl Knaths, Bartlett H. Hayes, George L.K. Morris. This was certainly before 1953, the year of Kuniyoshi's death. Bocour Papers, courtesy Mrs. Ruth Bocour.

¹¹⁵. *Boston University Boards of Visitors*. Boston: Boston University, 1977, p. 190.

year.¹¹⁶

Bocour's representation of himself and his motives for lecturing varied. At times he emphasized his deep involvement with art and artists, revelling in descriptions that portrayed his multiple roles as "raconteur, artist, collector, teacher and paintmaker."¹¹⁷ Yet he also expressed a firm commitment to business and would sometimes stress economic imperatives:

"I don't go to hear myself talk. I hope to sell paint. . . ." ¹¹⁸

Bocour was not the only representative of a paint company to lecture in art schools. Russell Woody, employed for many years by Permanent Pigments company (which had developed the first water-borne acrylic artists' paint) and Ron Hayes, (who developed a brand called New Masters paints) began travelling across the country speaking at art schools in the 1960s. Hayes laughingly evoked the spirit of jovial entrepreneurship he felt during the early days of travelling the art school lecture circuit at the same time as Bocour: "we were like two snake-oil salesmen."¹¹⁹ Hayes and Bocour did definitely combine education about art materials with an interest in sales. Bocour distributed sample sets of paints, in particular acrylics, and took orders at art supply shops near his speaking venues during his travels. Woody, however, maintains he not sell paint during his lectures but rather saw his lectures as fulfilling a more

¹¹⁶. This estimate is based on records which summarize his visits to schools during the period between September 1982 and February 1987. It may underestimate the number of talks overall because he may have given more than one lecture in each institution and he is likely to have been more active when he was younger. Bocour did not keep detailed records of all of his arrangements but there is a large body of material in his papers pertaining to his travels to art schools, notably in the form of news clippings from local publications, agendas, road maps tracing routes, written correspondence with his hosts and contacts, and printed ephemera about his visits (programmes, posters and announcements). Bocour Papers, AAA.

¹¹⁷. Often articles based on interviews with Bocour would appear in local papers or in small art magazines and bulletins. "Leonard Bocour to speak on "The Age of Acrylics"", *North Shore Art League*, Winnetka, Illinois, Volume 23, Number 4, January, 1976, p. 6. "Press Clippings". Bocour Papers, AAA.

¹¹⁸. Bocour and Cummings Interview, 1978.

¹¹⁹. Hayes did not continue to work as a paintmaker but became an art professor at Massachusetts College of Art where he was still teaching at the time of this writing. His research on artists' acrylic is discussed in Chapter 7. Hayes Interview with Jan Marontate 1994.

general educational function, in particular by teaching students and faculty about new synthetic materials.¹²⁰

Bocour's talks were not simply sales pitches. He spoke on three basic themes : new developments in artists' materials (which he called one "The Age of Acrylics"); traditional materials, pigments and grounds (called "The Permanent Palette") and finally his involvement with artists during the 1940s, 1950s and 1960s emphasizing "the turning away from form and content to. . . space and color and the non-figurative idiom" which he called "Paint, Painting and Painters".¹²¹ He also spoke about the Bocour art collection when it toured. Liberally seeded with stories about his experiences with artists and art, Bocour's lecture provided a highly personal gossipy account of his intense involvement in and affection for the New York art scene.

The Bocour Art Collection and Donations of Art

When Bocour was listed in *Who's Who in American Art*, it was as a collector of contemporary paintings and lecturer, not as a paintmaker.¹²²

Bocour became an avid art collector, frequently trading paints for paintings:

"Some of the paintings in my collection were gifts, some were purchased, but most were swaps"¹²³

The collection grew so rapidly that when Bocour and Golden moved to a large building in Garnersville, they planned to establish a gallery. Visitors to the plant commented that there were paintings everywhere, even in the manufacturing areas.

¹²⁰. Woody Interview with Jan Marontate 1994. Tape #1.

¹²¹. Although the talks and demonstrations appear to have covered roughly the same material according to press coverage, he does not appear to have read them from prepared copy. There is a transcript of one of the lectures which had been videotaped. *Lecture. Paint, Painting and Painters*, University of San Francisco, February 7, 1985. Bocour Papers, AAA.

¹²². Gilbert, Dorothy B. (editor). *Who's Who in American Art*, New York: R.R.Bowker Company, 1966, p. 44.

¹²³. Busa, Christopher. "Leonard Bocour 'Mister Aqua-tec'", *Provincetown Arts*, 1990, p. 40.

Both of the partners' homes were literally covered with original art.¹²⁴ By the 1960s word of the collection had spread and they began to share their artwork by lending it for shows. The collection was a remarkable reflection of Bocour's contacts with artists over the years and also a testimony to the craftsmanship of the paintmakers. Almost all of the artwork in the collection was done with paints made by Bocour Artist Colors.¹²⁵ The first travelling exhibition of selections from the Bocour Artist Colors Collection toured the U.S. under the auspices of the American Federation of the Arts in 1966-1973.¹²⁶ The show featured works by 61 prominent artists including painting by Helen Frankenthaler, Philip Guston, Alex Katz, Jacob Lawrence, Morris Louis, Kenneth Noland, Jules Olitski, Philip Pearlstein, Mark Rothko and Raphael Soyer.¹²⁷ It travelled to 47 art galleries and museums in the United States and Canada.

When Bocour and Golden ended their partnership, they divided up the collection. Golden's portion of the collection was largely dispersed by the end of the 1970s although he subsequently began to rebuild a collection.¹²⁸ Bocour's portion of the company collection and his private collection were still quite large (estimated at over 700 large paintings and uncounted numbers of small ones) and continued to grow. He and his wife Ruth loaned work from their private collection for exhibitions at university art galleries across the country.¹²⁹

¹²⁴. "Celebrating the "wedding" of *Bocour* and *Zipatone* at Lenny's [sic] Riverside apartment. It was breathtaking! Paintings on every square inch of wall . . . 50 years of American art! In addition, down a hallway, you passed a *Rouault* in the kitchen was a *Chagall*. You met *Picasso* in the bathroom. . . " *Art Material Trade News*, August 1982, p. 60.

¹²⁵. Bocour insisted all of the paintings in the collection had been done with colors he made but it is likely that some of the works were in fact done with other brands. The paintings were however generally done by artists who had used Bocour's paints.

¹²⁶. Anonymous. "Bocour Collection paintings on an extended national tour", *Art Materials Trade News*, January 1967, p. 36

¹²⁷. A complete list of the works in the exhibition and the locations is in the Bocour Papers, AAA.

¹²⁸. He sold some of the more important pieces, including work by Morris Louis, to finance the new paintmaking company he founded with his son Mark in 1980. Interview with Sam Golden, 1991.

¹²⁹. Steiner, Raymond. "Profile: Leonard Bocour", *Art Times*, June 1987, p. 17.

Bocour was available to lecture on his collection and became a vociferous advocate of purchasing art from contemporary artists:

"If you love art you have an obligation to support the living artist. buying paintings is as essential to the perpetuation of art as buying books and records is to literature and music."¹³⁰

The Bocours began to donate work to universities and colleges, stating that they had come to realize that many art students did not have enough exposure to original work by contemporary painters. They favoured institutions which were not near large museums or art galleries. Bocour also began a practice (which has been continued by his widow Ruth) of trying to place art in collections which are advantageous for the careers of artists in his collection.¹³¹ The emphasis in the collection was on supporting work by living artists. In Bocour's words:

"I'm a big believer in the contemporary artist, the living guy."¹³²

Of course there were also financial advantages for both the artists and the paintmakers by exchanging art for paint. As it turned out, some of the artists in Bocour's collection became very successful in the art market.

The Partnership Ends

In 1972 the partnership between Bocour and Golden was dissolved. Bocour continued to run Bocour Artist Colors until 1982 when he sold the company name and formulas to a manufacturer of commercial house paints called Zipatone which subsequently re-sold the formulas for the paints.¹³³ He stayed on for five years as

¹³⁰. Quoted in a publicity brochure for *The Leonard Bocours Collection*, Tampa Art Institute, n.d. Courtesy Mrs. Ruth Bocour, New York City.

¹³¹. This is an elaborate process in the case of larger institutions with strict accession policies involving consultation with the artists if they are living.

¹³². Bocour and Cummings Interview 1978. Archives for American Art, Smithsonian Institution, Washington, D.C.. Tape 2. Side 2. Transcript p. 56.

¹³³. They were apparently sold to Duro Art Industries of Chicago in late 1993 or early 1994. Conversation with Jay Krueger, Conservator of Modern Paintings, National Gallery of Art, Washington, D.C. and conversations with Duro Art Industries Inc., May 1994.

nominal director of the company. Before his death Bocour had returned to the area in Manhattan where he had established his first paintmaking studio, taking an office on 18th Street. There he had an office in the brushmaking factory of an old friend and fellow aspiring artist.¹³⁴ He worked as a color consultant, organized exhibitions of his art collection and lectured on art until shortly before his death in 1993.¹³⁵ Golden retired briefly and then in 1980, with his wife Adele, son Mark and daughter-in-law Barbara, founded Golden Artists Colors.¹³⁶

Golden Artists Colors: the Science of Making Synthetic Artists' Colours

Although it was founded after the period under study, Golden Artists Colors will be considered here because it is, to some extent, the spiritual heir to the small artisanal company established in 1932 by Bocour. Golden's new company built on the many of the practices and skills that he and Bocour had developed together during their lengthy partnership. Like Bocour Artists Colors, Golden Artists Colors began as a small paintmaking company specializing in high-quality artists' paints and custom-made painting media for artists. However, Golden's company was founded to specialize in high quality acrylics for artists, rather than hand-ground oils.

The new company was situated in upstate New York outside of a small village called New Berlin, not in downtown Manhattan. It was started by Sam and his family in the barn of his retirement home in the summer of 1980. (See Figure 8.) At the age of 67, Golden invested all of his life savings, sold virtually all of the important works in his art collection and borrowed from everyone he knew to go back into business at the

¹³⁴. This was the Robert Simmons Brush Company which had made a line of synthetic hair brushes to use with acrylic paints in the 1960s.

¹³⁵. He had an office in the factory-loft of the Simmons Brush Company, a family-run business which begun by artist Bob Simmons, a friend of Bocour. Simmons had developed a line of synthetic hair paintbrushes which were compatible with Bocour's acrylic paints.

¹³⁶. The first employee in the company, Chuck Kelly became a fifth partner.

urging of his wife in order to rediscover his identity as a paintmaker.¹³⁷ Mark Golden, the youngest of Golden's children, was born in 1954 the year the paint-by-number fad brought prosperity to his family. He and Barbara were both university graduates, unlike the Depression-poor generation that went before them.¹³⁸ Prior to becoming a paintmaker, Mark had a strong background in science, having begun doctoral-level studies in physiology and he also had experience in commercial applications of art through work in graphic design with an advertising firm.

Artisanal Methods Meet the Laboratory

The Goldenes set up the new company to make acrylic paints for artists according to Sam's specifications. Sam began to teach his son how to make paint using an artisanal approach. Mark worked at his side like an apprentice and recalled :

"There were months and months of just looking at the paint coming off the roller mills. He would say "Do you see? Do you see? And I would say . . . "I don't see anything Pop. I know something of what you're talking about. I know the quality you're talking about but I don't see it yet." . . . [He knew] the materials like the back of his hand. He could just tell."¹³⁹

Mark's training in science prevailed and he soon decided it was imperative to demystify the process of paintmaking by setting up a small research laboratory to seek answers when things went wrong:

"because we were dealing with clients that were pretty important . . . instead of the art of making paint we were into the science of making paint. [The idea was] that it didn't have to be shrouded in mystery. . . it was too frightening, especially the first three years. It was very, very scary."¹⁴⁰

¹³⁷. Sam Golden will be referred to by his first name in the section to avoid confusion with the rest of the family. He was spending six months in Florida and six months in upstate New York. In Florida he says that his main activity was going to the dog races but he finally realized that nobody he met at the races knew he was a paintmaker. Golden Interview, June 1991, Tape #1.

¹³⁸. Prior to beginning the new company Mark had worked in advertising and Barbara was a schoolteacher. She continued to teach while working for the company part-time for several years to help fund the family during the early years of the new company. Interview with Barbara Golden, June 1991.

¹³⁹. Mark Golden Interview June 1991. Tape#6.

¹⁴⁰. *ibid.*

Mark described the company's research process as a two-way exchange of ideas and inspiration between artists and their paintmakers, but some of the ideas for products and processes come from research done by the company using scientific sources. Many of the employees are well-educated. Several staff members have strong backgrounds in the sciences, among them Jim Hayes who has a Master's degree in chemistry and Ben Gavett, with a background in agriculture and a strong interest in toxicity and labelling. As a consequence, the company has tried to develop safe hygienic working conditions and environmentally-sound practices, notably a state-of-the art system for waste treatment.

In addition to membership in art materials trade organizations, Mark Golden has promoted increased contacts with researchers in conservation science and polymer chemistry. Members of the company attend short courses in polymer chemistry and meetings on advances in materials science. Ben Gavett was head of the Sub-Committee on Artists' Paints and Related Materials of the American Society for Testing Materials in 1994 and 1995, a prestigious position which illustrates the confidence artists' groups have in the new company since in the past committee members have preferred to elect consumers (like representatives of artists' groups) since they mistrust producers. The company's laboratory even sometimes communicates its research findings through scholarly channels. For example staff at Golden Artists Colors discovered the phenomenon of "support induced discoloration" while they were assisting researchers in the Art Conservation Department at Buffalo State College on treatment problems related to a 1970 acrylic painting by Robert Goodnough. This resulted in a paper co-authored with the college professors.¹⁴¹ The company sends

¹⁴¹. Hamm, James, Ben Gavett, Mark Golden, Jim Hayes, Charles Kelly, John Messinger, Margaret Contompasis and Bruce Suffield. "The Discoloration of Acrylic Dispersion Media", in Gratton, David (editor). *Saving the Twentieth Century: The Conservation of Modern Materials. Proceedings of Symposium'91, A conference held in Ottawa, Canada, 15-20 September 1991*. Ottawa: Canadian Conservation Institute, 1993, pp.381-392.

representatives to art conservation meetings and participates in research on issues related to synthetic media.¹⁴²

The Goldens subscribe to many scholarly journals in the areas of coatings technology, engineering and materials science. Sometimes ideas for new products come from this literature. For example they read about a company that had developed a technology for producing coatings from flaked metals :

"They do aerospace coatings and most of the coatings probably go to bombs and missiles . . . but we said "do you think we could incorporate that into acrylic paint?" We knew you couldn't use aluminum in acrylic paint because it gasses. . . but we thought we'd like to have a metallic paint using stainless steel.

As a matter of fact we went further. It was a silly thing but it's funny. We said "we have the technology to do a flaked stainless steel, could we do a flaked gold?" . . . we needed it so fine that you could make like a gold leaf. That way you could paint on gold leaf and actually burnish it which would be a neat way to gild. So we had to buy five ounces of gold and we made the first flake and we looked at it and we said "it looks like cheap glitter" . . . We sent it back to the plant [to] make it finer" . . . It gilded the media and the inside of the container. So we had to have them melt down all the media [used in the grinding process] so that we could get the gold back. Now we have these gold nuggets. Sometimes things just don't work. . . "¹⁴³

Even with all the modern technology available, developing new media for artists still resembles the same trial and error processes followed by Sam Golden in the early days of synthetic media for artists.

In addition to concerns about the tactile and visual qualities of working with the materials, there is increasing interest in using scientific testing to ensure longevity of materials adapting products made for other uses to the special needs of artists. Mark pointed out that

"we really do take the advances from the technology from that is out there because I'm sure Sam told you that nothing is made for artists' paints. . . [For example] in our new work we're doing in the lab in learning more about

¹⁴². See for example Golden's discussion of causes of cracking in pigmented acrylic systems. Golden, Mark. "Acrylic Paint Cracking". *McKay Lodge Conservation Report*. c.1991-2. p.4 and 14. Clipping from Thea Burns, Professor of Paper Conservation, Department of Art Conservation, Queen's University.

¹⁴³. *ibid.*

surfactants, you won't find anything in the [art] literature, in the Doerner book about how to deal with it. And you won't find it in the literature from the manufacturers that make these materials.

What you have to do is do the best research you can, trying to find out what would be appropriate for your system, dealing with all the variables. You know it has to be stable and lightfast. Not lightfast for ten years, it's got to be light fast for five hundred years. . . in gallery conditions. So you want to make sure that all the properties will be ensured whether its with the defoamers, or the preservatives, or the coalescing agents or the freeze-thaw stabilizers or the surfactants or any of the other materials will pass those. . . conditions. . ."

Within a few years the laboratory began to develop increasing sophisticated materials, such as a timed gel that allows an artist to work for several minutes with very thin paint before it begins to thicken, which is especially designed for working on a slant. The company established quality controls and record-keeping procedures to ensure that there is a complete trail throughout the entire production process allowing them to locate errors and to recreate serendipitous effects. According to Mark:

"Those products that don't turn out well, we record what happened. . . if the paint cracked maybe someday someone will call up and ask for a paint that cracks a certain way. I mean we have paints that crack like the Mojave Desert"¹⁴⁴

Learning from unexpected results is an important component of the research done at Golden Artists Colors. Mark points out that

"when Sam describes [his early work on acrylics] he downplays what he did because he says 'I didn't know'. But a lot of things that happened were because he didn't know"

citing the example of making alizarin water-borne acrylics, which should not have been possible because the pigment in question is water soluble.¹⁴⁵ The spirit of discovery through inspiration and trial and error still reigns as the paintmakers store ideas in anticipation of artists' requests. Also, in spite of the new emphasis on getting quicker, more accurate results using scientific methods, the paintmakers still look to artists for guidance.

¹⁴⁴. Mark Golden Interview 1991 tape #5.

¹⁴⁵. Mark Golden Interview, 1991 tape #5.

New Artistic Paradigms and the Artist/Paintmaker Relationship in Contemporary Artmaking

The company tries to maintain contacts with artists in a variety of ways. It still sends samples of new products to well-known artists who have known Sam since his New York days asking for comments.¹⁴⁶ It publishes a journal for artists called *Just Paint* which is designed to present information about new products and recent research on issues like toxicity and permanence of art materials (particularly acrylics) in accurate but fairly simple language.¹⁴⁷

Like Bocour's recollections of his first customer Leon Kroll, the Goldens' accounts of the history of the new company stress the importance to their business of the support of a well-known artist. For the Goldens this was Jules Olitski, who became one of their first major clients.

The first few years the company had difficulty selling its products. Dealers and distributors, even old contacts who had known Sam Golden for years, were reluctant to list their paint because the name "Golden" was unknown to customers.¹⁴⁸ In the model of Sam Golden's earlier years with Bocour, the paintmakers sought to keep the company afloat financially by producing paint for other brands, for example a fabric paint for screen printing t-shirts.¹⁴⁹ Also, like his great-uncle Leonard Bocour, who had travelled with a small cardboard briefcase to studios in the East Village so many years ago, Mark decided that to gain recognition:

¹⁴⁶. In particular to Jules Olitski and Larry Poons. See Chapter 8.

¹⁴⁷. The publication appears irregularly. It is a curious hybrid presenting well-researched articles of scholarly interest in a format which resembles conventional trade literature (occasionally failing to provide crucial information for scholars like date of publication of each issue).

¹⁴⁸. This situation has changed although the company is still small by industry standards. See for example "Profiles. Golden Artist Colors, Inc.", *Pen, Pencil and Paint*. National Artists Equity Association, Volume 1, Number 4, Summer 1994, pp. 5-6.

¹⁴⁹. Barbara Golden pointed out that these paints were very successful in part because the company had used very high quality pigments since they had used their stock of artists' grade pigments rather than the cheaper ones that other manufacturers purchase for this paint product. Barbara Golden Interview 1991. More recently the company made materials for animation backgrounds for the Disney corporation.

"I had to go through artists. I went artist to artist with a satchel of paint visiting clients . . ."150

Selling the paints directly to artists in their studios brought Mark into close contact with new problems contemporary artists were encountering with materials:

"New York is such a meeting ground. I'll never go in without meeting somebody new. You know somebody who is visiting another artist who'll say "oh, can you do this. I'm painting on whatever. I'm painting on slate. I'm painting on marble. I'm painting on shower curtains. . . on foamcore. I'm working on Saran wrap. . . It's always some new kind of challenge. Somebody wants to do something. . . you say "you tell me what you want and I'll make it for you". Many times the things seem silly. . . Larry Poons phoned up and . . . he said "can you make a paint called "oink" paint" . . . Hockney wanted to be able to print in crayons so the printer said "can you do something with these crayons so that we can print with them?". . . so [we did]. . . and Hockney could do a series of drawings that have the child-like quality of being done in crayon. The idea is that we want to be part of that creativity and we are. We get so many ideas from artists just wanting to do some of the silliest things that turn out to be some of the most wonderful things. . ."151

The custom work done by Golden Artists' Colors increasingly reflects the eclectic nature of modern art and many of the paints they make are coatings for work which transcends the traditional categories of painting. Special requests for custom products came from both artists and curators, for example, coatings to keep the smell of rotting fish down during a month-long installation at a gallery.¹⁵² Other projects have including matching the colour of chocolate syrup for a giant Claes Oldenburg sculpture and developing a product using temperature-sensitive crystals that change colour for Frank Stella. Mark Golden pointed out that not all artists are interested in specific characteristics of materials but instead seek particular effects, for example in his view:

"Stella's not interested in acrylics at all. He's interested in how far you can push materials. Sometimes [looking for] those answers kind of put you out all over the place."¹⁵³

150. *ibid.*

151. *ibid.*

152. Golden, Mark, Tom and Sam. Untitled and unpublished written summary of the history of Sam Golden's paintmaking prepared for Jan Marontate, July 1991, p. 4.

153. Mark Golden 1991.

Each time an artist makes a request the company keeps information on the research and formulas. This has resulted in a proliferation of products developed by the new company. By the early 1990s the company was producing new products so quickly that they had not had time to list them in their product descriptions, or even find names for them:

"we develop more products faster than we can think up names and so we decided to stay as generic as possible . . . [for example] there's Jenkins Green. We made this paint for Paul Jenkins and it was always called Jenkins Green. We never sold it to anybody else for four years. . . we do get some flack for that, like you know "you should have called it something different", but you know at that point it was Paul's. . ."154

By their accounts the impetus for this experimentation in the realm of paintmaking has to do with fundamental ideas about the nature of artistic creativity that the Goldens share. In their discourse the paintmakers express deep feelings of respect for artists and art. The paintmakers portray artists not merely as clients but as visionaries. Mark evoked this sentiment in his description of his early days as a paintmaker:

"part of my job was to go visit studios and when I'd go sometimes they would just be people I would be in awe of . . . I remember visiting Frankenthaler or Stella. . ."155

Ultimately the Goldens maintain that it is artists who decide what qualities they want in their materials. The paintmakers have developed a clear sense of the limits of their role in artmaking. Sam explained:

"We did not teach the artist how to paint. We just gave them the tools to paint with. . . . We make different tools to get different effects. We make 19 different gels. Why? Everybody else has one. An artist suggests I want something that is very heavy, very thin-- We make a gel, a soft clear gel that if you put it on the canvas you would swear it was an oil painting, high gloss, lacquered. . . the material [is] wide open. We have opened up the material. . ."156

154. *ibid.*

155. Mark Golden Interview 1991. Tape #4.

156. Sam Golden Interview 1991. Tape#6.

The Golden's discourse represents a shift away from Bocour's idea of knowing what the artist wants because he had tried to be one. Mark Golden clearly saw his job as that of a facilitator in the service of the artist. He placed his idea about his work in an historical perspective:

"it was a concept that although it did take a lot of time it really worked because artists really do need that help. . . .they really do want that expertise. It's a throwback to the Renaissance, to the early days of making oil paints. To have a paintmaker at your side with the ability to do things as just as simple as matching colour. We do that all the time. Or changing texture. . . Any property of the material. . . can be changed."

Yet there is still a sense of creativity which was conveyed by Sam in his discussion of his products:

"Like I said we don't make paint, we make tools that the artist works with. What they come up with God knows. It's a whole experience. . . .It's a whole new concept of painting. . . the acrylics they can do anything . . . whatever [artists] want we'll make. Something that will adhere to metal and fish. . . whatever."¹⁵⁷

By the end of the first decade in business the company was employing almost 40 people and in 1996 Mark Golden was named small businessman of the year for the State of New York.

Concluding Remarks: The Technical Knowledge and Social Identity in Paintmakers' Stories

The early history of the Bocour company highlights the importance of New York City as an artistic center at mid-century and illustrates points about the special qualities of the city which helped to establish its cultural leadership. As the urbanist Daniel Latouche has noted, New York City's architecture and urban configuration provided a special mix of the necessary conditions to satisfy the needs of artists which not every urban center could offer.¹⁵⁸ There were factory-lofts with commodious and

¹⁵⁷. Sam Golden Interview 1991, Tape#6.

¹⁵⁸. See for example: Latouche, Daniel, Dansereau, Francine, Germain, Annick. *Formes et Lieux d'Expression Culturelles: Problématiques et Concepts*, No. 872-6395, Montreal: Institut National de Recherche Culturelle-Urbanization, 1988; and Latouche, Daniel et al. *Les Équipements Culturelles à*

affordable spaces which were ideal locations for making large-scale works of art. The lofts were also well-suited for paintmaking, and they were in mixed use neighbourhoods.¹⁵⁹ Nearby there were hardware stores and art supply shops, and, not far away, galleries. Artists were drawn to New York from other places, to visit galleries and museums, to meet with other artists, and to buy supplies. For the paintmakers, daily contacts with artists in the same building as their factory made them aware of changing aesthetic preoccupations. As well, sources of chemical supplies and advice about them were not far away.

Bocour's accounts stress his strong identification with New York City and the artists who lived there. For him paintmaking was a way to remain involved with art even though he was unable to make a living as an artist. Bocour's desire for recognition in the arts is particularly evident in his portrayal of the new paint developed in his company as the first new medium since the rediscovery of oil painting 500 years ago by the artist brothers Van Eyck. This put him in the company of famous painters who had introduced new materials.

In Sam Golden's discourse, technical skill and ingenuity were also central but with a different emphasis. He placed his innovations with synthetic media in the context of great American inventors like Thomas Edison. He too went to artists' openings and collected works of art even though he had never actively pursued a career as a painter. Asked why he had decided to resume his work as a paintmaker after retiring to Florida, Golden explained that there "nobody knew I was a paintmaker."¹⁶⁰ His development of

Montréal: Déploiement Géographique et Insertion Spatiale, No. 872-6396, Montreal: Institut National de Recherche Culturelle-Urbanization, 1990.

¹⁵⁹. The centrality of the New York City location in the minds of art materials manufacturers is observable in a pattern noticed in studying trade literature from about 1930-1970. During this period New York manufacturers listing their address usually only give the street number and name. They frequently do not identify the city. American paintmakers from elsewhere always mention the name of the city in the addresses they give in their trade literature.

¹⁶⁰. Sam Golden Interview 1991.

artisanal skills was specifically linked to artists' paints and he handed his skills down to his son.

The company founded by the Goldens built on the combination of artistic sensibilities and technical skills developed over decades in New York City. But the dispersion of artists, and changes in transportation and communication networks made it possible for the company to maintain contacts while located in a rural community. New artistic paradigms intensified the search for novel painting materials. Using scientific research methods, the paintmakers continued to develop and change their products in response to artists' requests.

The accounts of Bocour and Golden's work as paintmakers describes processes of diffusion of technical knowledge in the arts, documenting exchanges amongst artists, paintmakers and chemists. They show ways in which technical innovation (theirs and that of the artists who used their paints) combined with artistic concerns and socio-economic considerations. As well, in the discourse of these paintmakers a sense of "disciplinarity" begins to emerge, a notion of the field of artists' paintmaking which clearly delimits their claims on the art produced but places them as important participants in the artmaking process. Above all Bocour and Golden's stories show that the appropriation of technical knowledge (about paintmaking) was a key feature in the construction of their personal and social identities allowing them to participate in creative cultural activity.

CHAPTER 5 -- Research Centers on Synthetic Media: Artistic and Scientific Paradigms

Discourse by artists and paintmakers reveals a deep-seated (but not universal) acceptance of the authority of science in "technical" matters, which coexisted with a fascination in the cultural power of art. At times, in matters regarding studio practices artists assumed the mantle of resistance to technological domination by insisting on their right to spontaneity. At other times they embraced an almost mystical faith in scientific method. In the decade following World War II broad debates raged about the hegemony of modern technological values in culture which were interpreted symbolically in art, but confidence in scientific methods for improving art materials went virtually unquestioned.

This postwar enthusiasm for applications of science to art was evident in the support for the study of innovative new art materials.¹ Two centers founded in the decade following the war, one in Pittsburgh and another in Mexico City, are remarkable manifestations of the interest in the new painting media. They illustrate two very different directions which technical research applied to the arts took after World War II. Both centers concentrated heavily on research about synthetic painting media. Both centers were associated with scholarly institutions which were nominally devoted to the development of technical knowledge about modern industrial products and techniques. However, here the resemblances cease.

The two research centers evolved in radically different directions. In one, a workshop for the study of new painting materials at the National Polytechnic Institute in Mexico City, artists' painting projects took precedence. Led by José Gutiérrez, the workshop's activities were geared to promoting experimentation with new materials and sharing information directly with artists and art students. The other, a U.S.-based

¹. Note that research was also carried out at laboratories serving museums and at institutions training conservators but none of these appear to have had the development of new materials from modern synthetic products as there primary goal.

project for research on materials begun by National Gallery of Art at the Mellon Institute was headed by a chemist named Robert Feller. There priority was eventually given to fundamental research presented in scholarly publications written for a specialized elite of scientifically-oriented technicians and conservators.

Considered together, these two research centers are almost polar opposites in their approach to technical issues in the arts, yet they provide a richly textured picture of activities relevant to painting which are often hidden from view in conventional accounts of the history of art and artists. Their activities were remarkably influential in the diffusion of technical knowledge about synthetic painting media to artists and art conservators respectively.

El taller de ensaye de materiales de pintura y plasticos at the National Polytechnic Institute in Mexico City and José Gutiérrez

The "workshop (or studio) for the study of modern painting materials, especially plastics" (*El taller de ensaye de materiales de pintura y plásticos*) at the National Polytechnic Institute in Mexico City sought immediate artistic applications for new materials. It was initiated at the request of a group of Mexican artists including José Clemente Orozco and Dr. Atl (Gerardo Murillo), who approached then Minister of Education Jaime Torres Bodet on the matter in 1945. The workshop was conducted by José L. Gutiérrez, an artist by training, and Manuel Jiménez Rueda, who is described as a chemist.² Information about the exact date it began is hazy; it may have functioned from about 1945-46 and was certainly in full operation by 1948.³ In 1955, Francisco

². Rueda's name appears in Alma Reed's biography of Gutiérrez and in one article in Gutiérrez' press clippings where he is referred to as "Chemist Manuel Jiménez Rueda". Philip Stein, a workshop participant, indicates that the workshop was begun by Gutiérrez with an assistant who was a chemist. Reed 1960, p. 111; Stein, 1994, pp. 154-55; and Heydon, Doris. "A Revolution in Mexico . . . in Painting", *PCMEX travel Club Bulletin (Mexico City)*. Volume X, Number 208-A, May 1, 1950, pp. 2-6.

³. The 1946 date given in a recent publication by Stein is a possibility. The exact date of the founding of the workshop has not been confirmed. Gutiérrez mentions in his textbook of formulas that it was founded after his return to Mexico in 1945 but his use of dates is not particularly reliable since he gives

Pego Moscosso, also an artist, became an instructor at the workshop and was appointed head after Gutiérrez' death in 1968. The workshop was discontinued in August 1992 when Pego Moscosso retired.⁴

Although the workshop was nominally founded to provide "scientific and industrial" support for painters, Gutiérrez ran his "research center" like a studio art class not like a scientific laboratory.⁵ Former students in the workshop depict a lively, almost chaotic atmosphere characterized by free-wheeling artistic "experimentation" rather than rigorous scientific testing procedures.⁶ The *Taller* holds a peculiar place in the history of synthetic media. The work of the *Taller* was influenced by Gutiérrez' open approach to sharing information and his eclectic manner of collecting it. Formulas developed by Gutiérrez and his colleagues was diffused internationally by the large body

1928 as the date Siqueiros began to use Duco, fully four years before any confirmed use. Alma Reed retains 1945 as a date in a biographical text but Francisco Pego Moscosso believes that the date may have been later, perhaps in the early 1950s, since he thought it had only been functioning for about 4 years before he arrived in 1955-56. A 1951 newspaper article about a series of lectures given by Gutiérrez at the University of Mexico identifies him as a summer school teacher at the University of Nuevo León and does not mention any connection to the Polytechnic Institute but this may have been a simple omission by the reporter. Arnold Belkin maintained he attended the workshop in 1948 and painted a mural with the group which is now destroyed. Interview with Francisco Pego Moscosso by Jan Marontate, Mexico City, June 18, 1994. Tape One. Stein, Philip. *Siqueiros: His Life and Works*. New York: International Publishers, 1994, pp. 154-155; Gutiérrez, José L. *From Fresco to Plastics: New Materials for Easel and Mural Paintings*, National Gallery of Canada, Ottawa, 1956, p. 7, and Reed, Alma. *The Mexican Muralists*. Crown Publishers, New York, 1960, pp. 110-113. Anonymous. "Entusiasmo por las conferencias que sustentó el Maestro José L. Gutiérrez en la E. de Verano", *Ídica Universitaria*, Wednesday, August 10, 1951, p. 6; Arnold Belkin. *33 años de producción artística*. Mexico: CENDIAP/INBA, 1989, p. 137.

⁴. No records about the founding and history of the workshop were found at the Polytechnical Institute. According to Pego Moscosso, this is not surprising since the workshop was frequently forced to relocate and each move disrupted record keeping. According to Pego Moscosso, the technical research conducted by the workshop is covered in the posthumous publication of Gutiérrez' recipes and instructions. Gutiérrez, José. *Del fresco a los materiales plásticos*. Mexico City, Instituto Politécnico Nacional, 1986. The catalogue of the Siqueiros Archives at the *Sala del arte público Siqueiros* lists an article from a Polytechnic Institute journal on the workshop dated 1948 but the article could not be located in the Archives, nor could the journal be found in Polytechnic Institute Library or other major libraries in Mexico City. The listing is as follows: "Taller de ensaye de materiales de pintura y plásticos" [sic], *Revista IPN*, Mexico 1948, 8p.

⁵. Interviews by Jan Marontate with Francisco Pego Moscosso, Russell Woody and Nicholas Roukes, 1994.

⁶. Woody Interview 1994 and Roukes Interview 1994.

of participants who visited the workshop or read publications based on work done there. Yet Gutiérrez was both very modest in its claims insisting that it was merely adapting products not inventing them. This was not surprising given Gutiérrez' background and interests in painting.

Gutiérrez' Background

José López Gutiérrez (1900-1968) was born to a family of modest means in 1900 in Miacatlán, a town in Mexico not far from Cuernavaca-- an important centre of militancy during the revolution. As a very young child he recalled that "folk painters" of the village allowed him to dabble with paint.⁷ Overall though there appear to have been few pleasures during his childhood; accounts of his stories of his youth depict early years marked by war and severe economic hardship.⁸ His father died when he was a young child and he was raised by relatives who participated in the agrarian uprising led by Emiliano Zapata. His uncles were executed for their political convictions.⁹ He moved to Mexico City, then travelled alone to California where he made a living as a migrant farm laborer. There he survived the notorious influenza epidemic of 1918, which killed thousands, fighting for his life alone in a strange county.

The second decade of the 20th century was a period of rising social

7. Heydon 1950, p. 3.

8. Telephone interviews by Jan Marontate with Gutiérrez' daughters, Josephina Mintzer of Sunnyvale California, May 14, 1995 and Eleanor Zwerdling of Doylestown, Pennsylvania, May 13 1995. Some of the records concerning Gutiérrez' work, which had been stored at his house in Cuernavaca, were probably lost or destroyed in confusion surrounding the settlement of the estate after the death of his widow in 1992 although his daughter Josephina and son-in-law Herbert Mintzer managed to salvage some records and paintings. Josephina and Herbert Mintzer provided copies of newspaper clippings and relevant biographical records from Gutiérrez Papers and Scrapbook.

9. The accounts vary as to the precise conditions for the killings and exactly who was murdered. In another version: "His family, for reasons which later escaped the grown Gutiérrez, supported Victoriano Huerta, the traitorous friend and betrayer of President Francisco Madero. consequently, when an anti-Huertista faction ravaged Miahuatlán [sic] -- the home of Gutiérrez -- it butchered the whole family except young José and a sister." Note that Lynch misidentifies Gutiérrez' birthplace. Lynch, James B. "Unsung Artist of the Mexican Renaissance", *Américas*, volume 22, Number 6, June 1970, pp. 35-39.

consciousness amongst U.S. intellectuals, as writers and photographers began to document the hardships of poverty-stricken workers. In California Gutiérrez met one such journalist, who worked for the New York Times and wanted to write about hobos by living with them. Travelling with the journalist across the country, he made his way to New York City where he worked in a restaurant and learned to speak some Greek. He returned to Mexico City in the 1920s, perhaps several times, where he learned to type, was married and made a living as a chauffeur.¹⁰

Gutiérrez' Early Art Career in New York City and Return to Mexico

Gutiérrez' career in art began slowly, as a part-time activity. On one of his sojourns in Mexico City he purportedly studied art under Alfredo Ramos Martínez, a hero of the revolutionary reform of the system of art education in Mexico.¹¹ He returned to the New York City area in the early 1920s and spent most of the next two decades there, where an active community of artists and art associations provided further opportunities for part-time study. He took classes at the Pratt Institute, the Greenwich Settlement House, the Art Students' League (which provided free art instruction) and possibly at an art institute in Harlem.¹² He eventually taught art in Brooklyn. During his sojourn in the New York area he painted murals in schools, union halls, and in Bellevue Hospital, an institution for "the insane".¹³

During these years he worked in restaurants and in manufacturing companies but no record remains of exactly which ones. Sources indicate that he may have worked in

¹⁰ There are some discrepancies between the biographical information given in the posthumous publication of his last book and that given by his daughters.

¹¹ Anonymous. "Nota biográfica", in Gutiérrez 1986, p. 5.

¹² He claimed to have graduated from the Pratt Institute with a B.A. in 1929 and to have done "advanced study at the Brooklyn Art School and Harlem Art Insitute" according to his credentials listed in a Mexico City College roster of professors, but this is not commonly mentioned in interviews, nor could it be confirmed by his family. *Mexico City College Announcement of Courses*, 1952-53, p. 13.

¹³ Anonymous in Gutiérrez 1986, p. 5.

the chemical laboratory of a large commercial paint manufacturer in New Jersey¹⁴, or at a Westinghouse plant¹⁵ or at an aeronautics company¹⁶, any of which could have given him contact with synthetics and recently developed modern plastics.

By the end of the 1930s he had managed to rent a studio, but it wasn't until he was hired to paint in the New Deal art projects that he was able to work full-time as an artist. In the 1930s he also appears to have been increasingly involved with art organizations and prominent socialists like artist Ben Shahn. One of his contacts was Alma Reed, who he recalled meeting for the first time in 1932 at a conference on the work of Orozco held in a Welfare Office in Greenwich Village. Reed was a tireless promoter of Mexican art both ancient and new and had impeccably left-wing political associations (as the former lover of the assassinated Yucatán revolutionary Felipe Carrillo Puerto).¹⁷ She provided access to the New York art scene for many Mexican artists, notably Orozco, helping them find commissions and writing about their work. In the 1920s she had worked as a free-lance journalist, often contributing to the influential *New York Times*, and it was in this capacity that she first visited Mexico, covering an archaeological expedition to the Yucatán in 1923. After several years of travels she opened the Delphic Studios, an art gallery in New York. Later in 1935, Gutiérrez attended the First American Artists' Congress seated next to her and wrote a eulogy of her 30 years later.¹⁸ Although Gutiérrez expressed solidarity with socialist principles through his approach to sharing technical information, he does not appear to

¹⁴. Anonymous in Gutiérrez 1986, p. 5. This may have been in 1939-1940. Lynch 1970, p. 36.

¹⁵. Interview by Jan Marontate with Luis Miró, Gutiérrez' former partner in the artists' paint company, Politec. June 1994.

¹⁶. This may have been Kaiser Aeronautics, where his daughter recalls they manufactured explosives. Interview with Josephina Mintzer, May 1995. Recall the chemical similarity of guncotton used for explosives and pyroxylin or nitrocellulose used to make Duco-type lacquers. He also apparently worked for a Brewster Aeronautics Corporation on Long Island as a tool designer during the war. Lynch 1970, p. 37.

¹⁷. See Gutiérrez' homage to Reed. Gutiérrez, José. "La inolvidable *Peregrina*". *Selecciones del Reader's Digest*, November 1968, pp.41-48.

¹⁸. Gutiérrez 1968, p. 45.

have joined any political group. The traumatic events of his childhood were thought to explain his subsequent rejection of specific political affiliation.¹⁹ He did however participate in many political demonstrations throughout his life, joining students in a protest march against repression one month before his death.²⁰

Records about the two and a half decades Gutiérrez spent in New York are sparse. He seems to have been modestly active in New York art circles by the mid-1930s. He was apparently a member of the New York-based American Society of Mural Painters.²¹ Members of the society were sent a questionnaire about materials and techniques for a manual on fresco in the context of the New Deal art project.²² He is almost certainly the "Gutiérrez" cited as an authority in this manual although, as is the case with many "how to" books for artists, the manual fails to provide complete documentation about sources.²³ He later claimed that his formulas were used in W.P.A. art projects, but no record of this has been found in government archives.

Gutiérrez was a key figure in the diffusion of information about synthetic painting materials because of his intense contacts with artists throughout his life, notably with Siqueiros who he appears to have met in New York City. Gutiérrez participated in Siqueiros' Experimental Workshop there in 1936, when Siqueiros' wild enthusiasm for synthetic lacquers developed.²⁴ Interestingly Gutiérrez claims to have been working

¹⁹ Lynch 1970, p. 36.

²⁰ Belkin, Arnold. "Presentación", in Gutiérrez, José. *Del fresco a los materiales plásticos. Nuevos materiales para pintura de caballete y mural*, Mexico City: Editorial Domés, 1986, p.8.

²¹ Some later records from the society are in the Archives of American Art, Smithsonian Institution, Washington, D.C. but these do not contain information about the 1930s. The society does not currently possess them. National Society of Mural Painters Papers, AAA reel D-250A; and Conversation with Everett Molinari, President of the National Society of Mural Painters, 1994.

²² WPA. AAA DC80 and DC57:316-341.

²³ *Fresco Painting. A circular presenting the technique of fresco painting.* . . . W.P.A. Technical Series. Art Circular No. 4, September 10, 1940, Federal Works Agency, Work Projects Administration, Division of Professional and Service Projects, Washington, D.C. A1509. p. 12. AAA reel DC57:316-341.

²⁴ Hurlburt 1989, p. 207 and Hurlburt 1976, pp. 237-346.

with synthetic media before this time, which is not inconceivable since Siqueiros himself later wrote a respectful introduction to a handbook by Gutiérrez in which Siqueiros credits him as a source of information in early experiments with new media.

"Experiments" at the New York workshop appear to have been creatively anarchistic, and did not follow a rigorous methodology possibly providing a model for Gutiérrez' management of his *Taller*. Gutiérrez remained in touch with Siqueiros throughout his life. According to a former student, when Siqueiros was imprisoned in the 1960s:

"José would go to visit him in prison and bring him paints and the story was that [Siqueiros] also used the acrylic paints [made by Gutiérrez] to paint the inside of his jail cell."²⁵

Gutiérrez travelled to Havana in 1944 to paint a mural for a military hospital, perhaps on the recommendation of Siqueiros who had been in Cuba just before.²⁶ In 1945 Gutiérrez returned to Mexico City where he helped found the workshop at the National Polytechnic Institute which he led until his death in September 1968.

Gutiérrez the Artist

Throughout his life Gutiérrez continued to paint and to exhibit his art although his work on the development and diffusion of synthetic paints overshadows his efforts to be recognized as an artist. In addition to murals in the U.S. and Cuba, and to his work as an assistant or technical advisor, he did some murals at the National Polytechnic Institute (now destroyed).²⁷ In Mexico in the 1940s he concentrated on easel paintings for his own work, usually somewhat representational in style. Near the end of his life he sometimes did what were described as "pure abstractions (conveying)

²⁵ Roukes Interview 1994, side one.

²⁶ Lynch 1970, p. 37.

²⁷ This was called simply *Deportes* (Sports). It was done in ethyl silicate on the Stadium of the National Polytechnic Institute in Mexico City in 1945 and destroyed when the stadium was demolished. Suarez, Orlando S. *Inventario del Muralismo Mexicano*, Mexico: Universidad Nacional Autonoma de México, 1972, pp. 362.

moods of psychedelic fantasy".²⁸ He used curved panels for shaped canvases and various textural effects in his later works.

In the early 1950s he had participated in many group exhibitions in the U.S. and his work was represented in several major museums.²⁹ After his return to Mexico he had a one-man show, he regularly organized shows of work done by students and other artists involved with the *Taller* and had a few shows of his own in New York Galleries.³⁰ In the 1960s his work was shown in a number of group exhibitions in the U.S. in solo exhibitions at the Pratt Institute, in a private gallery in San Francisco and in a group show in New York.³¹ He also did graphic design.³²

Some of these shows were obviously intended as didactic presentations of the results of research done at the National Polytechnic Institute. For example, in 1965 he gave a closing address at one of his solo exhibitions in Mexico on "The Revolution of Plastics in Mural and Easel Painting."³³ However it he took his art very seriously and tried to promote it.

It is clear that Gutiérrez considered himself an artist, and wished to be

²⁸. Lynch 1970, p. 39.

²⁹. In interviews he mentioned participating in group shows at the Metropolitan Museum, MOMA, Brooklyn Museum and Riverside Museum, and mentioned that his work was part of permanent collections in the Museum of Modern Art, the Brooklyn Museum and the Cleveland Museum.

³⁰. His first recorded solo show in Mexico was at the Inés Amor Gallery in Mexico City. He also had a show at the Newton Gallery in New York sponsored by the Mexican Government Department of Tourism, April 26th- May 15th, 1954; and was part of group exhibitions at the Carnegie Endowment International Center (April 12-24, 1954) and at the Lynn Kottler Gallery in New York (June 6-June 16, 1955). He also had an exhibit in Ecuador in 1967-68 according to his daughter, Josephina Mintzer. Correspondence with the author, October 1995.

³¹. "What's New In Art", *The New York Times*, Sunday, March 19, 1967, n.p. Courtesy J. and H. Mintzer. The joint show was of "Paintings in Acrylic with Op effects" with sculptor Ray Hitchcock in April 1967 at XXth-Century West in NYC. *The ARTgallery Magazine*. California Issue, April 1967, p. 27. The San Francisco show was in April 1966 at the San Francisco Art Center. Lydon, Kay. "José Gutiérrez Replies to OP", *Westart*, San Francisco, April 15, 1966, n.p. Courtesy J. and H. Mintzer.

³². After his death his graphic work was reproduced in a greeting card by the Unitarian Universalist Service Committee. "Holiday Cards Bear Gutiérrez Design", *The News*, Mexico City, Saturday, November 15, 1969.

³³. "La Revolución de los Plásticos en la Pintura Mural y de Caballete". This was a show sponsored by "El Instituto Mexicano Norteamericano de Relaciones Culturales" in Mexico City

considered as such. In press coverage he is usually identified, presumably at his own behest, as an artist conducting research rather than as a researcher or technician. Interviews in magazines and news stories about him appear primarily to have been done because of his role as technician, teacher and technical researcher on art materials. His work never attracted the attention of influential critics or connoisseurs. Barring some unforeseen reappraisal of his work it is doubtful that he will be remembered for his painting alone. However, perhaps his work as an artist did give him some visibility with scholars since he is the only one of the pioneers in synthetic paintmaking to be included in the *McGraw-Hill Dictionary of Art* where he is identified as a painter and teacher known as "a pioneer in the application to painting of industrial compounds such as vinylite, silicones of nitrocellulose [sic], and acrylics".³⁴

Chronology of Gutiérrez' Early Research on Modern Media: Communications with Chemical Companies and Artists

It is in the area of technical experimentation that Gutiérrez' contributions to the arts were most recognized during his lifetime and after. His innovative work on techniques illustrates a remarkable capacity to obtain information from chemists, chemical manufacturers and other artists about technical matters. His accounts provide insights into the unexpectedly creative potential for collaboration between chemists and artists.

Gutiérrez appears to have experimented with synthetic materials prior to his contacts with Siqueiros in New York.³⁵ He recalled that:

³⁴. Gutiérrez may have known the editor of this dictionary. A favorable review by editor of the volume, Bernard S. Myers (an art professor and critic) was quoted in Gutiérrez' publicity for one of his shows. Myers, Bernard S. *McGraw-Hill Dictionary of Art*, Volume 3, Toronto: McGraw-Hill Co., 1969, p.33.

³⁵. In the first edition of his handbook of formulas and techniques for painters which he was written in 1949, he claims to have begun work with synthetic materials 15 years beforehand. Lodge retains this 1934 date but provides no documentation. Lodge, Robert G. "A History of Synthetic painting Media with Special Reference to Commercial Materials", *American Institute for Conservation Preprints*, June 1988, p.118. Gutiérrez 1956, p.4, 6.

"When he decided to begin his technique investigations, the New York Public Library was his first school."³⁶

Significantly Gutiérrez did not consider himself an innovator, but rather, more modestly, an artist sharing knowledge with colleagues, which may explain his generosity with technical information:

"All I've done is apply industrial materials for use in the plastic arts. . . My investigations consist in getting to know thoroughly industrial materials . . . and them turning them over to my fellow-artists in a slightly new form, or in the same form but with new uses."³⁷

As far as his itinerary as regards research on synthetic media, his earliest encounter with the new painting media was probably through the new Duco-type automotive lacquers. He remembered using these pyroxylin (nitrocellulose) lacquers in 1932 and then trying vinylites (vinyl acetate resins) for easel painting in 1934.³⁸ Though not impossible, this is a very early date for use of vinylite by an artist since the earliest mention of it located to date in American art magazines does not occur until 1939 in an exhibition of paintings at the gallery run by a friend of Gutiérrez : Alma Reeds' Delphic Studios in New York City.³⁹

Gutiérrez also became a proponent of the use of a controversial synthetic medium for mural painting (ethyl silicate), a modification of a technique which the artist Siqueiros had learned from a German chemist in 1933, during his search for a modern

³⁶. Heydon 1950, p. 3.

³⁷. Heydon 1950, p. 2.

³⁸. Gutiérrez 1934, p. 73.

³⁹. A show of paintings by Lue Osborne at the Delphic Studios claimed to be the "first one man show of canvases executed in a new medium : synthetic resins". Osborne and her husband Cordray Simmons used polyvinyl acetate resin in solution as a medium. Lodge states that they had been in contact with Du Pont about possible inclusion of paintings using synthetic media in the New York World's Fair and also had contacted Walcraft Laboratories about selling a beginners' kit for painting with synthetic resins. They also purportedly contacted Robert Feller at the Mellon Institute about their experiments with synthetic media. The source of this material commonly mentioned by Gutiérrez at the time was not the Du Pont company but the Union Carbide Corporation which marketed the resin under the trade name "vinylite". Anonymous. "A Successful Practitioner in a New Medium: Lue Osborne". *The Art News*, June 10, 1939; and Lodge 1989, p. 123.

painting media suitable for use on outdoor concrete walls.⁴⁰ The technique was controversial because paintings made with it deteriorate rapidly unless very strict procedures are followed.⁴¹ On the other hand, one its' appeals was its potential for use with concrete, which was a common building material for architecture by the 1930s.

The path of the diffusion of information about this particular medium illustrates the importance of collaboration across disciplinary boundaries for artistic practices. Consider some key moments in the diffusion of ethyl silicate in the arts in North America. Gutiérrez credits Siqueiros with introducing him to "a medium called silicate" for mural painting, probably around 1934-36 in New York City.⁴² The medium and the technique of applying it was referred to as the Keim process, a modified version of "stereochromy" wall painting which had been developed by German chemists in the 19th century.⁴³ The process was named for Adolph Keim who was active in the late 19th century as president of a German society of artists, conservators and paintmakers dedicated to "rational" painting techniques.⁴⁴ In New York during the 1930s other

⁴⁰. See Chapter 2.

⁴¹. Handbook writer Russell Woody was so concerned about the propensity for failure using ethyl silicate that he devotes an entire (short) chapter to "warn the artist of its disadvantages". Woody 1965, p. 139.

⁴². Gutiérrez 1956, pp. 44-47. Mayer's papers contain numerous articles and formulas for using ethyl silicate in painting which appear to have been sent by a representative of the Union Carbide company and which may be the same as those sent to Gutiérrez. See in particular Mayer Papers, AAA, reel 212: 1198-1401.

⁴³. The method called "stereochromy" which was first initiated by the chemist J.N. von Fuchs in the early 1800s used a chemical closely related to ethyl silicate and this technique is mentioned in the first English translation of influential artist's handbook by Max Doerner which appeared in 1934 in the U.S.. Even though the 1921 original German edition was used by some artists, like Bocour's mentor Emil Ganso, the English version would have had more impact on New York art circles. Gutiérrez spoke English fluently by this time. . Doerner, Max (trans. Eugen Neuhaus). "Mineral Painting [stereochromy]", *The Materials of the Artist and their Use in Painting with Notes on the Techniques of the Old Masters*. New York: Harcourt, Brace and World, 1934, p.311-314.

⁴⁴. See the section called "Models, Forerunners and Influences. . ." in Chapter 7. Adolph Keim developed Keim silicate (potash water-glass or potassium silicate) as a substitute for sodium silicate. Note Lodge identifies the medium developed by Keim (whom he refers to as "Kaim") as ethyl silicate rather than potassium silicate however does not provide documentation and may be confounding the modern formula with its historical roots. Mayer, Ralph. *The Artist's Handbook of Techniques and Materials*. New York: Viking 1970 (1940 original), pp. 361-2; and Lodge 1988.

artists and researchers had been investigating the use of silicates for mural painting too, notably an authority on art materials named Ralph Mayer.⁴⁵ During the New Deal art projects attempts were made to develop the technique for a mural decoration project plan for the New York subway.⁴⁶ Ralph Mayer was involved in the subway mural project and Gutiérrez may have been too, since he was active in mural painting circles at the time although detailed records with the names of all the collaborators have not been found. Both were in contact with the company that manufactured the chemical products used in painting medium (Union Carbide) which supplied users with basic formulas for the use of the materials in coatings. There is however no written record of contacts between Mayer and Gutiérrez until 1948, after Gutiérrez had returned to Mexico. Mayer then received a paper by Gutiérrez on his research through a contacts at the chemical company.⁴⁷ In the paper Gutiérrez reported on his assistance with the use of ethyl silicate for a major outdoor mural completed in 1947-48 by the famous Mexican painter José Clemente Orozco.⁴⁸

In this example of the diffusion of technical knowledge, information about a synthetic medium flowed from a chemist to an artist (Siqueiros) and from the artist to his student (Gutiérrez) who subsequently contacted a chemical manufacturer (Union Carbide) exchanging technical advice related to the use of new materials in art (by Orozco). Simultaneously an artist-chemist (Mayer) worked with artists (on the New Deal project) on applications. The chemical company diffused information about the work by Gutiérrez in Mexico to the New York researcher (Mayer). Gutiérrez was an

⁴⁵. Mayer tried for decades to develop a marketable artist's paint based on silicates but was unsuccessful. The earliest records on his investigations date from 1932. Ralph Mayer Papers, "Silicon Esters, 1932-1051", AAA, reel D 212: 1095-1289.

⁴⁶. See "Subway murals, 1937-1938", Ralph Mayer Papers, AAA, reel D 212: 1443-1574.

⁴⁷. An employee of the Carbide and Carbon Chemicals Corporation sent Mayer a translation of a 1948 paper by Gutiérrez. (Letter from Ralph Mayer to E.B. Newton, March 15, 1949, Ralph Mayer Papers, AAA reel D212: 1132-33.) Gutiérrez, José. "A Revolution in Mural Painting Techniques", typescript, dated September 1948. Ralph Mayer Papers, AAA, reel 212: 1244-49.

⁴⁸. The mural was *National Allegory* done at the *Escuela Normal para Maestros* in Mexico City.

enthusiastic proponent of ethyl silicate for outdoor murals, and taught the process in his Mexico City *Taller* and in lecture tours in South America, Canada and the U.S.. Gutiérrez published the formulas which were widely quoted and re-used in well-distributed artists' handbooks in the 1960s.⁴⁹

Thus Gutiérrez kept in contact with U.S. chemical manufacturers after his return to Mexico, corresponding in particular with chemical companies based in the Eastern U.S. near his former New York home. He read about a new acrylic resin preparation in a publication of the Rohm and Haas Company.⁵⁰ In his words:

"in the mid-1950s I read in Rohm and Haas's magazine *Resin Review* about the development of an emulsion vehicle for paint. I got shivery. This is what I was looking for. I asked for a sample, began to formulate and after two years of experimentation introduced a paint I could offer to artists as something really new.

You see, paints for artists must have a variety of characteristics. They must -- according to the immediate needs of the artists-- be thick, thin, very thin; capable of being applied with brush or air brush; offer textures for special effects and bas relief, or be as smooth as glass."⁵¹

He began to produce water-compatible acrylic paints on a small scale, claiming that

"In 1955, research information was received from the Rohm and Haas Company in the United States which eventually led to the development of an acrylic (water based) paint formulation at the Polytechnic Institute. This paint, perfected in 1956, was labeled Politec"⁵²

⁴⁹. For example, Jensen bases much of his handbook on Gutiérrez' work. Jensen, Lawrence. *Synthetic Painting Media*. Englewood Cliffs, N.J.: Prentice-Hall, 1964. The practice of seeking assistance from chemical manufacturers is recommended in more recent publications. Gottsegen, Mark David. "Experimental Exterior Paints (Silicate Paints)", *The Painter's Handbook*, New York: Watson-Guption, 1993, p. 249.

⁵⁰. This was probably in the June 1953 issue. Anonymous. "New vehicle for water paints. Rhoplex AC-33 is fast drying, has little odor, scrubs well", *Resin Review*, March 1953, pp. 3-6. Subsequent issues gave detailed formulas using Rhoplex AC33 and a dispersing agents for pigments suspended in water called Tamol. The two related articles appearing in later in 1953 were : Anonymous. "Deep tone wall paints. Rhoplex AC-33 and Tamol 731 team up to five deep tone formulations for new paint vehicle", *Resin Review*, June 1953, pp. 3-5; Anonymous. "Rhoplex AC-33 in Primer-Sealers", *Resin Review*, September 1953, pp. 9-10. Courtesy Henry J. Gambino, Advertising Services Manager, Rohm and Haas Company, Philadelphia, Pennsylvania.

⁵¹. Anonymous. "Mexico . . . Land of Murals", *Rohm and Haas Reporter*, Volume XXVI, Number 6, November-December 1968, pp. 4-8.

⁵². Gutiérrez, José L. and Nicholas Roukes. "Pioneering Plastic Paints", *Painting with Acrylics*, New York: Watson-Guption, 1966, pp. 24-27.

The first articles appearing in the trade magazine, *Resin Review*, were published in 1953. Though difficult to locate in libraries, *Resin Review* was a technical magazine widely distributed to customers of the Rohm and Haas company providing information for applications of the chemical products. Gutiérrez may have been referring to these articles or to specific technical bulletins on the product received subsequently from the company.⁵³

Meanwhile in the U.S., Henry Levison had also begun to examine samples of Rohm and Haas's new acrylic emulsion and later maintained he brought out the first complete line of acrylic paints for artists in 1954-55. By this time Len Bocour's (oil and turpentine compatible) acrylic resin *Magna* was purportedly also in full production. (These are the three main pioneers in the manufacture of acrylic paints for artists, however priority claims of others will be treated later in Chapter 7.)

Testing Techniques in the *Taller*: Artists, Scientists, and Engineers Join Forces

Accounts of the workshop emphasize an atmosphere of chaotic creativity. Pego Moscosso recalled the disapproval of more conservative colleagues at the National Polytechnic Institute, especially the professors of science and engineering, who shook their heads at the apparent lack of classroom discipline on inspection visits. The heady atmosphere of artistic discovery was at the heart of Gutiérrez' research. Although in one of his books he mentions scientific techniques to simulate testing and the use of specialized measurement tools by painters, he also points out that

"as a supplement to laboratory testing, artists are called on as consultants. They

⁵³ The Rohm and Haas company produced many publications to advertise and explain its products with the end in mind of encouraging their use. Often bulletins covering a broad range of products were sent with suggestions to clients that more detailed bulletins were available on request. The detailed pamphlet on the materials used in acrylic resins and emulsions for artists was: *Acryloid and Rhoplex. Acrylic Ester Resins and Emulsions*. Philadelphia: Rohm and Haas Company/Resinous Products Division, 1953. A more general bulletin covering a wider range of products, undated but stamped received by the Bureau of Public Roads in February 1955 from about this time is: *Synthetic Resins for Coatings*. Rohm and Haas Company, n.d. (before 1955). Trade Literature, Branch Library, National Museum of American History, Smithsonian Institution, Washington, D.C..

are asked to experiment with the new media and to offer their opinions on the practical problems of painting with them. Thus, the artist, the scientist, and the engineer join forces . . . in the unmerciful testing given to the new plastic media"⁵⁴

The testing techniques employed in the *Taller* were generally not meticulously monitored laboratory experiments but more closely resembled exuberantly expressive artistic experiences for those involved.

Frequently the workshop executed murals as a way of experimenting with new materials. One participant recalls draining a public swimming pool which a local official had turned over to the workshop :

"we painted a mural [on the walls of the empty pool] that came out looking pretty much like a Miró and when we filled it with water all these colours and the forms just kind of bobbed around. The idea was to see how long the paint would withstand the rigors of the chlorine and just the water. . . and the mural actually stood up quite well. . . based on that I think he actually changed the formulation of some of the colours. . . it was kind of fun."⁵⁵

Another almost comical testing technique was described as follows:

"we would paint on 4 by 8 sheets of plywood or canvas and strap it to the top of our cars. And we drove around in Mexico for that year with the sun and the water and the rain racing down. We did our own sort of tests. So he had his own way of testing the paint, trying to subject it to the rigors of the environment. . ."⁵⁶

This resembles Sam Golden's testing of new paints by applying brightly coloured mixtures to the outside of home much to the consternation of some neighbours.⁵⁷

Gutiérrez' tests appear to have been quite haphazard, though he subjected the new materials to rigors which would far exceed the normal punishment inflicted on indoor artwork (or even partially protected outdoor murals). Above all he seemed intent on encouraging artists to explore and enjoy modern materials and innovative techniques as new means for creative expression.

⁵⁴. Gutiérrez and Roukes 1966, p. 24.

⁵⁵. Roukes Interview 1994.

⁵⁶. Roukes Interview 1994.

⁵⁷. Tom Golden Interview 1991.

Collaboration by Gutiérrez and Members of the *Taller* with Muralists and Other Practicing Artists

Gutiérrez was often consulted about technical problems. In the words of one of his students:

"he became the technical guru for the whole group of people painting in the Mexican muralist movement as well as a lot of the other painters, like Tamayo. . . He was disseminating all sorts of different materials to all these different -- well-known now -- Mexican artists. [They came to him at the Polytechnic Institute] or he would go to them as well.

It was an open society in that the artists communicated well and they weren't hiding things. . . the more the years go by the more secretive artists have become. . . They don't want to give out their formulas and so on. In those days everybody gave information to everybody else."⁵⁸

For example in 1946 Gutiérrez went to San Miguel de Allende to supervise the preparation of a grotto-like room to be painted by Siqueiros and his students as part of a program of instruction in mural painting.⁵⁹ In spite of sporadic efforts to bring in leading artists, San Miguel de Allende was:

"considered a magnet for, uh, artists who were not major. In other words they were artists who painted scenes and decorative works and things of that nature but not leading edge artists."⁶⁰

Siqueiros had been called in at the last minute to give classes at the provincial art school there which had begun to attract a colony of U.S. art students. In 1946 the art instructor had decided to leave just as forty-six U.S. war veterans with G.I. Bill grants to cover expenses and tuition began to arrive.⁶¹ Siqueiros' first wife, who was living there at the time, contacted him to come to teach at a new school which had been

⁵⁸. Woody Interview 1994.

⁵⁹. Among the students identified by Siqueiros who participated in this mural are: William Hammill, Amy Middleton, Violet McCluskey, Vivian Harryman, Mary Reardon, Ted Appleby, Ernest de Soto, Jack Baldwin, Herman Greissle, Jeff Sulzer, Raymond Brossard, Leonard Brooks, David Barajas, Bert Snelling, Eddie Coriaty, Lester Smith, Phil Stein, George Reed, Carl Young, Eugene Massin, John Roberts (photographer), Howard Jackson (photographer) and Enrique Cervantes. Siqueiros, D.A. *Como se pinta un mural*. Cuernavaca: Ediciones Taller Siqueiros, 1979 reprint of 1951 original. p. 40.

⁶⁰. Woody April 7, 1994. Tape 1, side 1.

⁶¹. The private school called the "*Escuela Universitaria de Bellas Artes*" was founded in 1938 by the Peruvian artist Felipe Cossio del Pomar and Sterling Dickinson, a student of Mexican culture from Chicago. Stein, Philip 1993, especially p. 165.

founded to replace the old one.

The Veteran's Affairs attaché at the U.S. consulate in Mexico City hindered approval of the new school because of Siqueiros' political affiliations and accused Siqueiros of trying to convert the veterans to communism. This was the beginning of persistent efforts by U.S. officials to impede contacts between Siqueiros and U.S. art students, particularly veterans receiving government funding. As a result, U.S. veterans began to attend Gutiérrez' workshop as a substitute. A few years later, Russ Woody, a Korea veteran studying art in Mexico on the G.I. Bill states:

"I also met Siqueiros but didn't have much to do with him because . . . of the G.I. Bill. Right after I had first gone down to meet him . . . somebody came by from the American Embassy saying that if I associated with people like Siqueiros they would pull my G.I. Bill because he was a known active -- very active (and he had been all his life) -- Communist. And. . . you know there was the Communist scare in the United States. . . so they prevented me from having associations with some of the Mexican muralists that way. . . but I did talk a lot with José Gutiérrez and went down to his school."⁶²

The technical assistance provided by Gutiérrez to muralists involved an increasingly varied range of materials by the 1950s. For example, Gutiérrez assisted Siqueiros on a mural for the *For the Complete Social Security of All Mexicans* in the Hospital de la Raza in 1952-3 using a vinylite-based primer.⁶³ In 1957 he used a new fiberglass cloth surface (Celotex) with an acrylic primer for a mural called *From Porfirismo to the Revolution* which was finished by Juan O'Gorman (since Siqueiros temporarily stopped painting after the death of Rivera).⁶⁴ His influence spread outside of Mexico but documentation of his many contacts is difficult. For example, Canadian painter York Wilson, may have consulted him in Mexico prior to using a formula like the one recommended by Gutiérrez for a vinyl acetate medium in a large mural for the

⁶². Woody Interview 1994, tape 1.

⁶³. The primer was based on vinylite beads dissolved in methyl isobutyl ketone according to Stein. Stein 1994, p. 212.

⁶⁴. Stein 1994, p. 242.

Imperial Oil Company completed in Canada.⁶⁵

Beginning in the 1950s, acrylic resins became an important material for use in murals. Siqueiros' enormous unfinished *Polyforum Cultural Siqueiros* begun in 1965 was dedicated to the heroic theme "The March of Humanity in Latin America". It is a monumental octagonal public building with a meeting room area which incorporates art and architecture in dramatic expressive forms, featuring heavy relief work painted with custom-made colours based on Rohm and Haas products and finishes developed for high-tech industry.⁶⁶ The building was a massive demonstration of *escultopintura* (sculptuopainting), Siqueiros' appellation for his new approach to artmaking which was dedicated to going beyond the bounds of the picture plane, incorporating sculpture, painting and architecture. Although Gutiérrez did not produce the paint or grounds for this specific project, Siqueiros credited him for his contributions:

"He has broken the single-technique control of traditional painting that dominates not only the academic but the pseudo-modern snob approach, by accumulating different easy modern processes . . ." ⁶⁷

Gutiérrez' efforts to make information about techniques and materials accessible to a broad range of artists, both famous and unknown, was legendary. In 1950 he is quoted in an interview with a journalist as saying:

"Why, in the past two years six murals have been executed in Mexico using methods discovered in my investigations workshop. Murals completed and those in progress are one by Luis Arenal in Chilpancingo, another by Garcia Bustos in Temixco, three commercial murals in Mexico City done by students of the workshop, Gonzalez Camarena's work in one of the Social Security buildings, a large wall in the School of Fine Arts in San Miguel Allende, being painted by David Alfaro Siqueiros and his pupils, and a project in the near future for Monterrey." ⁶⁸

⁶⁵. Brooks, Leonard. *Oil Painting. Traditional and New*. New York: Reinhold, 1959, p. 139.

⁶⁶. These solvent-based coatings were made by the Carboline Company of St. Louis Mo. using Acryloid resins from Rohm and Haas. The company produced this finish primarily for use by off-shore oil rigs and space launch towers. Anonymous. "Mexico . . . Land of Murals", *Rohm and Haas Reporter*, Volume XXVI, Number 6, November-December 1968, pp. 4-8.

⁶⁷. Reed 1960, pp. 110-113.

⁶⁸. Heydon 1950, p.2.

He continued to teach and provide technical advice throughout his life and:

"Only days before his death, he had conferred with the young muralist Salvador Almaráz, who was using acrylics for his series of murals in the Palacio de Gobierno of Irapuato, Guanajuato."⁶⁹

In addition to providing technical advice to working artists, Gutiérrez and his workshop learned from them. The members of the workshop were active in art community events, participating in exhibitions, protests and of course simply observing other people working. Artmaking was a public event for many of the muralists. One of the workshop participants recalled the thrill of watching the progress of a mural by

Siqueiros:

"... I was there [in Mexico City] when he [Siqueiros] was doing Chapultepec Castle and he did it all with an air gun. The whole thing was knocked in with an air gun initially. And it was the most gorgeous abstract painting I've ever seen.

Then he came back in and put this veneer of social realism over top. But he was one of the best abstract airbrush artists I've ever seen, or air gun artists."⁷⁰

Thus communications between participants of the workshop and working artists occurred in diverse ways.

Spreading the Word I : Gutiérrez' Lecture Tours and Handbooks for Artists

In connection with research conducted at the workshop, Gutiérrez began to lecture at art gatherings after his return to Mexico in the 1940s. He was invited to many art schools to lecture on plastic materials and sometimes also spoke on other artistic concerns, such as "The Dynamics of Mural Composition".⁷¹ He never abandoned his hope of attaining recognition as an artist even though his invitations to lecture were clearly prompted by interest in his technical expertise. In addition to talks and courses

⁶⁹. Robbins, Ted. "Concerning Maestro José Gutiérrez", *Mexico Quarterly Review*, Volume 3, No. 3, 1969, pp. 57-59.

⁷⁰. Woody Interview 1994. Tape 1.

⁷¹. This was one of two lectures he gave at the University of Puebla's School of Plastic Arts in 1963. The other was on plastics as a material in painting. Anonymous, "Around the Town", *The News (Mexico City)*, Tuesday, June 4, 1963, p. 9.

in Mexico, he travelled to the U.S. on many occasions, to Canada in 1956, and in Latin America in the late 1950s or early 1960s.⁷² His trip to Canada was particularly important for the diffusion of information about the techniques and materials he had been studying.

Gutiérrez was invited by the National Gallery of Canada in collaboration with the National Industrial Design Council to give lectures and demonstrations of the new techniques with synthetic media in the fall of 1955.⁷³ The invitation came at the behest of the then-new gallery director, Alan Jarvis.⁷⁴ An article in *Canadian Art* magazine states that the goal of this invitation was to enable architects and artists to use the new techniques to "embellish the functional forms of contemporary buildings".⁷⁵ He spoke in Ottawa, Montreal, Toronto, Calgary, Regina, Winnipeg and Vancouver where museums, art schools and architects' societies helped organize one or two sessions in each place.⁷⁶ Gutiérrez had arranged for a two-page pamphlet called "Formulae for Mural or Easel Painting" to be reproduced in Ottawa for distribution during his lectures and sought assistance in locating Canadian suppliers of the materials he required for his demonstrations. A technical representative of a subsidiary of Union Carbon and

⁷². Correspondence from Josephina and Herbert Mintzer, October 1995.

⁷³. Donald W. Buchanan, one of the organizers, was affiliated with both institutions at the time (as secretary of the National Industrial Design Council and Associate Director of the National Gallery of Canada).

⁷⁴. Letter from D.W. Buchanan to José Gutiérrez, June 15, 1955. "Outside Activities/ Organizations. 7.4-G.- Gutiérrez, José (lectures)". National Gallery of Canada Archives, Ottawa.

⁷⁵. "José Gutiérrez comes from Mexico to Lecture on New Techniques in Mural Painting", *Canadian Art*, Volume XIII, No. 1, autumn, 1955, p. 212, photo of Gutiérrez p. 313.

⁷⁶. The list of contacts provided to Mrs. Gutiérrez after the tour by the gallery was as follows: Montreal (John Bland, School of Architecture, McGill University and John Steegman, Montreal Museum of Fine Arts), Toronto (Sidney Watson of the Ontario College of Art), Winnipeg (J.A. Russell, School of Architecture, University of Manitoba), Calgary (A.F. Key, Calgary Allied Arts Council, Coste House and Illingworth Kerr, Institute of Technology and Art); and Vancouver (Fred A. Amess, Vancouver School of Art, and B.C. Binning, Fine Arts Gallery, University of British Columbia). Letter from D.W. Buchanan, Associate Director of the National Gallery of Canada to Mrs. Gutiérrez, November 28, 1955. In addition, he also spoke in Regina at The School of Fine Arts, Regina College, University of Saskatchewan. Letter from Kenneth C. Lockhead, Director of the School of Fine Arts to Donald Buchanan. Outside Activities/Organizations. 7.4-G.- Gutiérrez, José (lectures)". National Gallery of Canada Archives, Ottawa.

Carbide Company helped the gallery locate suppliers.⁷⁷ The requisitions for materials and the formulae provide some evidence of what materials and techniques Gutiérrez might have demonstrated. He appears to have shown artistic applications of ethyl silicate and vinylite on different types of grounds (concrete, masonite) adding various substances for special textural effects (diatomaceous earth, glass beads, marble grits).⁷⁸ He had also planned to demonstrate the use of pyroxylin but there is no record of purchases of either the nitrocellulose lacquers then available or ingredients to make them. Although he later said that he had begun to use acrylic emulsions and begun to formulate water-borne artists' acrylics by this time, no mention is made of either acrylic resins or acrylic emulsions in the records of his visit to Canada.

Attendance reports sent to the National Gallery from Calgary indicate that several hundred people (125-250) were at each of his two talks there. If attendance was comparable in other locations he could have reached well over a thousand artists, architects and art students, but it is unclear how many people in total attended his lectures and the figures may be much lower. At any rate follow-up correspondence indicates that organizers felt the lectures were well-attended and reactions to his lectures were mostly enthusiastic.⁷⁹ Recent research has indicated that one of the major effects of Gutiérrez' lectures on artistic practices in Canada may to stimulate the use of house paints and industrial products.⁸⁰

⁷⁷. The gallery had written to the New York office and the office referred their request to H.M. Rees, Technical Representative of the Carbide Chemicals Company in Montreal. Rees provided the names of seven different suppliers for the various solvents, resins and the ethyl "Cellusolve" requested. Letter from H.M. Rees to D.W. Buchanan, August 1, 1955 "Outside Activities/Organizations. 7.4-G.-Gutiérrez, José (lectures)". National Gallery of Canada Archives, Ottawa.

⁷⁸. Several different resins (VMCH-2, vinylite resin, VYHH-4 vinylite resin and Gelva V-15) were purchased from Canadian Resins and Chemicals Ltd. in Montreal.

⁷⁹. One exception was Fred A. Amess, Principal of the Vancouver School of Art who criticized Gutiérrez' command of the subject and his English. Letter from Fred A. Amess to D.W. Buchanan, November 29, 1955. "Outside Activities/Organizations. 7.4-G.-Gutiérrez, José (lectures)". National Gallery of Canada Archives, Ottawa.

⁸⁰. Barclay in conversation with artist Douglas Morton learned that Gutiérrez' 1955 in Regina coincided with the opening of the International Paints factory there "allowing him to buy Rhoplex to

It is impossible to assess the impact Gutiérrez' tour on Canadian painting practices, but certainly the very fact that this lecture tour took place is in itself evidence of a growing interest in plastics for painting during the 1950s. Almost a decade later art conservator Nathan Stelow conducted a survey of Canadian artists about changes in their techniques, particularly the introduction of synthetic media in the 1950s. The responses to the questionnaire supported the hypothesis that during the late 1950s artists were abandoning oils and other traditional media in favour of synthetic media, either commercial products (lacquers, etc.) or acrylics made for artists (resins and emulsions) and that they often used mixed techniques.⁸¹

After the lecture tour the National Gallery of Canada received requests for more copies of the pamphlet containing formulae which Gutiérrez had distributed during his demonstrations.⁸² At the time of his trip to Canada Gutiérrez was actively seeking a publisher for the English-language version first handbook on mural painting which he had written in 1949. He wrote to the Gallery after returning home asking for assistance from the gallery in seeking funds from UNESCO for a publication. (There was also apparently a Spanish-language version scheduled for publication by the National

make his own paints." However it should be noted that there is no mention of Rhoplex in Gutiérrez' pamphlet. Barclay in Leclerc, Denise. *Crisis of Abstraction in Canada*. Ottawa: National Gallery of Canada, 1992 p. 209.

⁸¹. Stelow's survey of Canadian artists was conducted in 1963. He questioned the artists about changes in their painting techniques before and after 1958 taking into account "newer (non-traditional) techniques" involving synthetic media. Of the 400 artists contacted 195 completed the mail-in questionnaire. The statistical results published show drops in all traditional techniques, the highest being oils (-27%) and watercolours (-18%). Increases in the use of synthetic media, including media not intended for artists' use were also noted. The methodology for reporting the results makes the changes difficult to assess in part because 14 categories of new techniques are compared to 7 categories of old ones. The results are published in connection with curator Marion Barclay's technical essay for an exhibition catalogue. "Technical Appendix A: Techniques of Canadian Painters before and after 1958 by Nathan Stelow," in Leclerc 1992 p.228.

⁸². See for example, a covering letter sending 25 copies to Kenneth Lochhead at the University of Saskatchewan from Mary Macaulay of the Design Centre. November 9, 1955. "Outside Activities/Organizations. 7.4-G.- Gutiérrez, José (lectures)". National Gallery of Canada Archives, Ottawa.

Polytechnic Institute in Mexico in 1956, but no trace of this has been found.)⁸³ In the same year the National Gallery of Canada produced a mimeographed version of the 89-page manuscript called *From Fresco to Plastics. New Materials for Easel and Mural Paintings.*, which appears to be the first official publication of Gutiérrez' formulas although mimeographed sheets of instructions had been in use by his students for years. In fact this is a modestly-produced 89-page mimeographed booklet not a full-fledged typeset bound volume, but it has had a remarkable and continuing impact on knowledge about synthetic media and is a reference in most subsequent artists' handbooks on synthetic media.

Gutiérrez begins his exposition with a few pages of discussion of the interest in using industrial products in modern art bringing up many of the themes touched upon by Siqueiros and some new ones: keeping up with the times and avoiding stagnation, enhancing creative potential, producing work that lasts, working rapidly, saving money and bucking the establishment (by using "revolutionary methods").⁸⁴ Over a third of the book covers traditional fresco techniques and painting. Then synthetic media are introduced and Gutiérrez presents the artistic use of ethyl silicate, pyroxylin lacquers and synthetic resins (vinyl acetate and vinyl chloride acetate resins), discussing the preparation of grounds, application techniques and, of course, formulas for preparation of the pigmented media.

A second book, also in English, was written with co-author Nicholas Roukes and published by Watson-Guptill (the publishers of *American Artist Magazine*) in 1966 called *Painting with Acrylics*.⁸⁵ Roukes had been an art instructor teaching at a high

⁸³. Letter from José Gutiérrez to D.W.Buchanan, November 19, 1955. "Outside Activities/Organizations. 7.4-G.- Gutiérrez, José (lectures)". National Gallery of Canada Archives, Ottawa.

⁸⁴. Gutiérrez 1956, p. 7.

⁸⁵. Gutiérrez, José and Roukes, Nicholas (Preface by David Alfara Siqueiros). *Painting with Acrylics.*, New York: Watson-Guptill, 1966.

school in Hayward, California interested in writing about the Mexican muralists. In 1964 he travelled to Mexico City on a sabbatical where he met Gutiérrez and participated in the *Taller* at the Polytechnic Institute. Roukes later recalled the circumstances leading to the second book:⁸⁶

"... It was a very informal kind of arrangement, you know I just went over to talk to him and he invited me to have a corner in the studio there and he gave me some of the formulas to experiment with.

I wanted to do a little story on José Gutiérrez so I sent in this biography to the *American Artist Magazine* in New York. ... it was rejected. The editor at the time said to me: "This is not a story. This is a book. This is really hot material! Can you get Gutiérrez to co-author the book with you?"

So I asked Gutiérrez about that and he said "sure". José came to the Bay area where I continued to teach."⁸⁷

Roukes eventually settled in Canada where he taught in the Art Department of the University of Calgary until he retired in the early 1990s.

This second book contained a foreword by Siqueiros, who was in prison for sedition at the time they wrote the book. Including an endorsement from Siqueiros was an audacious gesture for a book intended for mainstream American audiences. It is somewhat surprising that the fairly conservative publisher agreed to publish the foreword. Yet, it may have been part of an attempt to appeal to youth culture trends in the 1960s. Watson-Guption's flagship magazine, *American Artist*, was by this time endeavoring to expand its target audience with blatant appeals to young artists and counter-cultural trends, showing fetching young women in mini-skirts and psychedelic art alongside its usual features geared to a core audience of Sunday painters committed to representational art. In his preface, Siqueiros produced a brief glowing description of the discovery of synthetic materials by Mexican muralists mentioning pragmatic, political and artistic dimensions of efforts to modernize techniques and pompously

⁸⁶ Interview with Nicholas Roukes by Jan Marontate, May 2, 1994.

⁸⁷ By this time Roukes was teaching at the University of California at Hayward. Roukes Interview 1994, side one.

praised the contributions of Gutiérrez :

"We found that the time-honored methods of working in fresco -- and also in oil paint-- were not suitable for surfaces exposed to the ravaging elements of sun, rain, and constant climatic changes. . . . So it was that our Mexican artists moved . . . to the industrial knowledge of the United States. We sought to modernize our techniques through consultation with laboratories which were researching plastic materials . . . Out of these experiments were born the practical theories and formulas of José L. Gutiérrez. . . his book will make a valuable contribution to the artist's vocabulary, not only by documenting the early experiments and formulas (which are still the finest to be compounded for the artist) but also by challenging the creative artist with the enormous possibilities of the revolutionary plastic paints."⁸⁸

This second book contains a brief history of the development of plastic paints, seven different formulas using a variety of synthetic media,⁸⁹ a description of commercially prepared synthetic paints, studio tips and a series of chapters about how to paint different subjects or in different genres (still life, portrait, landscape, collages etc.). The earlier chapters on mural painting and paint manufacture are obviously intended for serious artists or advanced students. However the second half of the book clearly endeavors to provide formulaic inspiration for hobbyists and amateurs as well. The discussion of commercial brands and the list of suppliers make this a valuable historic document which was probably quite useful as well at the time since many books on the new media avoided brand names. Overall though, the effect of the book is somewhat confusing since it is neither in the genre of a "traditional" artist's handbook for serious painters (which in the late 19th and early 20th century did not customarily include instructions of what to paint), nor does it follow the expectations of a vulgarized "how to" book for rank amateurs (because the first part of the book treats the readers as potentially accomplished artists with serious interests and commitments to developing advanced technical skills). It is thus a curious hybrid. (See also Chapter 7 and Tables

⁸⁸. Siqueiros in Gutiérrez and Roukes 1966, pp. 8-9.

⁸⁹. They were identified as follows in the book : emulsified polyvinyl acetate (white glue), vinylite, vinyl chloride, ethyl silicate, acrylic resins, polyacrylic esters and pyroxylin.

11-13 in Appendix B).

Gutiérrez' third book bears the same name as his first but in Spanish--*Del fresco a los materiales plásticos*-- and was published posthumously under the auspices of the Polytechnic Institute. Published in 1986, it is the first Spanish-language edition of his formulas to our knowledge. It is however, essentially a translation of the first short book published in Canada, which it should be recalled was written in 1949.⁹⁰ Two short chapters (five pages in all) on acrylic resins and acrylic emulsions have been added. The one on acrylic resins is essentially a translation from the corresponding chapter in the second book with some minor changes but giving the same basic ingredients.

The final chapter on acrylic resins differs from the preceding publications, principally by recommending the purchase of the brand of paint Gutiérrez developed, arguing that special laboratory conditions and techniques were necessary for successful manufacture of acrylic emulsions. Also in the conclusion a paragraph has been added cautioning readers to choose paint made with permanent pigments. These comments on permanence may have been inspired by concerns of the technical editor, Tomás Zurián, a well-known conservator.⁹¹

A short introductory essay by the Canadian-born muralist Arnold Belkin, who had been a student of both Gutiérrez and Siqueiros, provides a highly-charged note to this otherwise disappointing work since no significant new material is presented on recent research by Gutiérrez. Was this lack of new material in part because the publication of technical information on formulas might compromise sales in the paintmaking business he had started which continued to function after his death? Or

⁹⁰. The translators names are not listed on the title page but with the publisher's information, perhaps to downplay the fact. They were Helen Backal de Soriano and Federico Ménez.

⁹¹. Zurián denied any responsibility for the contents of the book, maintaining he had merely proof-read it for technical misprints. Interview with Tomás Zurián Ugarte and Lolita Fernández by Jan Marontate, June 1994.

could it be that in his papers there was simply nothing new in written form available to add? Pego Moscosso stated unequivocally that the book provided a clear picture of the activity undertaken by the workshop. Yet it is surprising that the formulas remained unchanged in thirty-seven years (or even in the 17 years between Gutiérrez' draft of the manuscript and his death), particularly given the many modifications of synthetic products and the introduction of new ones by the chemical industry during this period. This last book then is best considered as a slightly revised reprint of an historical document.

The impact of Gutiérrez' formulas is clear in other publications on synthetic media, although it is difficult to assess whether the publications or contacts with him and the *Taller* were most important to other authors. (It should be noted here that most of the handbook authors also mention two other pioneer paintmakers, Len Bocour and Henry Levison.) Some of the authors were former participants in the *Taller*, for example, Leonard Brooks who published *Oil Painting. Traditional and New* in 1959⁹² and Russell O. Woody Jr.⁹³ Lawrence Jensen's 1964 classic *Synthetic Painting Media* cites Gutiérrez' *From Fresco to Plastics* frequently combining it with interview material and correspondence with other prominent paintmakers. Other publications which do not even acknowledge Gutiérrez' work appear to have somehow come in contact with his instructions (perhaps inadvertently through other sources). For example, a chapter on artists' techniques in an authoritative 1972 inventory of Mexican muralism gives some recipes for synthetic media which are identical to those in

⁹². Brooks was born in London, England in 1911, came to Canada as a child, and after studying art in Canada and travelling in England taught art in Toronto. He served as a war artists in the Royal Canadian Navy and in 1947 went to Mexico where he stayed at least until 1959. From the back flap of the dustjacket of Brooks, Leonard, *Oil Painting. Traditional and New*, New York; Reinhold, 1959. See also, Brooks, Leonard. "A Canadian Artist in Mexico", *Canadian Art*, 7, Spring 1950, pp. 94-98.

⁹³. Woody Jr., Russell O. and Levison, Henry W. *Painting with Synthetic Media*, New York : Van Nostrand Reinhold Co., 1965.

Gutiérrez' 1956 book.⁹⁴

Spreading the Word II: Participants of the *Taller*

Hundreds of students from all over the world participated in this workshop, coming from Canada, the U.S., Central America, South America, Europe (England, Czechoslovakia, Poland, Estonia, Norway), Australia and India. This international interest was a source of nationalist pride, emphasized in assessments of the accomplishments of the workshop, such as reviews of the periodic exhibitions organized by workshop participants :

"representing one more demonstration that Mexico has made a genuine cultural contribution to countries from every latitude."⁹⁵

The purpose of the *Taller* was not only to investigate new materials but to spread knowledge of painting techniques, especially new ones developed for modern materials:

"The dozen American pupils, who are all veterans, and the others, will take their new knowledge and techniques back to their home cities, where they will in turn teach more artists anxious to keep up with the latest developments.

The system of the *Taller* is modern, democratic, in rhythm with today's world. Here there are no specially-privileged "geniuses", no secret formulas. Formulas are free for the asking, and plenty of people do ask."⁹⁶

Gutiérrez taught many students over the years both in the workshop and in other courses. In addition to a core student body he welcomed casual visits from artists and students from other institutions. Also in the early 1950s, Gutiérrez was an associate professor of mural techniques at Mexico City College, which drew many Americans and some Canadians. He did teach other courses as well as serving as a guest lecturer in

⁹⁴. See for example the formulas for vinyl acetate resin paints. Two obvious explanations for his failure to credit Gutiérrez and the *Taller* might be that he obtained the recipes from someone who failed to credit Gutiérrez, or that he obtained them from the same source as Gutiérrez. Suarez 1972. "Capítulo III: Técnicas empladas en el muralismo Mexicano", pp. 333-354.

⁹⁵. «Este acontecimiento cultural y artístico. . . representa una demostración más de que México está aportando para los países de todas las latitudes, una verdadera contribución cultural.» Mayo, José. "México: La gran capital del mundo de las artes plásticas". Unidentified Newspaper clipping dated Sunday, November 30, 1958, p. 14. from Gutiérrez Papers, J. and H. Mintzer.

⁹⁶. Heydon 1950, p. 2.

studio classes.⁹⁷ Asked to identify Canadian students on the occasion of his lecture tour in Canada in 1955, he responded:

"At the present time I have no Canadian students. Those who have studied with me previously are: Leonard Brooks, Gloria Jeffries, Arnold Belkin, a portrait painter named Les, a Mr. Foster whose first names escape me at the moment. Two others, one from Toronto and one from Vancouver came a year ago asking advice.

When at Mexico City College I had four Canadian students, but. . . I do not have records of their names."⁹⁸

No complete record of his students exists.

Several artists who participated in the *Taller* subsequently became authorities on art materials, producing widely-distributed artists' handbooks, such as Russell Woody, Nicholas Roukes and Leonard Brooks. Many probably taught at art schools, the financial mainstay of artists who are not able to make a living selling their work. Some, like Belkin and a new generation of Mexican muralists, took on apprentices and assistants whom they instructed in the new techniques.

Woody's trajectory and experiences in Mexico provide insight into conditions at the time for expatriate art students in Mexico City and indicate some ways information about experiences with Gutiérrez and the *Taller* were diffused throughout the U.S. by participants.

Russell O. Woody Jr. attended Wake Forest University in North Carolina before serving time in the army and air force in Korea (1951-53). After the war he resumed his studies at the University of Miami where he studied journalism and art, obtaining a B.A. in 1957. During his studies in Miami he became very interested in art materials, inspired by a large art supply store in Coral Gables and by his university contacts but he recalls:

"I was a starving student in those days. I was using anything I could get. In

⁹⁷. For example he taught at the University of Nuevo León. Anonymous. "Entusiasmo por las conferencias que sustentó el Maestro José L. Gutiérrez en La E. de Verano", *Vida Universitaria*, Wednesday August 10, 1951. Gutiérrez Papers courtesy Josephina and Herbert Mintzer, California.

⁹⁸. Letter from José Gutiérrez to D.W. Buchanan, July 21, 1955. "Outside Activities/ Organizations. 7.4-G.- Gutiérrez, José (lectures)". National Gallery of Canada Archives, Ottawa.

fact, Leonard Bocour came through and gave a lecture at the colleges through the whole area and lectured at the University of Miami while I was there. And at the end of the lecture I went up and talked to him and he gave me a whole bunch of paint and so that's how I got started on Bocour. . . he lectured all his life. . . It was held in the classroom. In fact it was a design course I was in and he came in and talked on materials. . . at that point. . . he was very interested in his oils, the premium oils especially."⁹⁹

One of Woody's professors, Eugene Masson, had studied in Mexico with Siqueiros (at San Miguel de Allende almost ten years earlier, where Gutiérrez had provided assistance in preparing a wall for a mural painted by Siqueiros and the students). Masson had decided to return to teach at Mexico City College where there was a Master's programme in painting and graphics with American accreditation. Woody followed Masson to Mexico where he met art professor Toby Joysmith who he credits with further stimulating his interests in materials.¹⁰⁰ In Mexico, Woody had his own small studio, which was basically an enclosed garage where he often painted with acrylic resin automotive lacquers diluting them with volatile solvents.

Health problems caused by art materials spurred Woody's involvement in research on new media which he undertook for his Master's thesis:

"Now the reason I did that was I was almost killed by using the lacquers because I was in this little studio -- there was very little ventilation -- and I was breathing lacquer fumes all day. . . And so I became very ill. In fact at one point they thought I had leukemia and they basically said you know "you got about three months to live". It had stopped up a lung completely and I had to have that pumped out and they put me on oxygen and antibiotics. It took me a long time to get my health back. But as a result of that I became allergic to any solvents. And so the thesis was done basically to find out what was toxic and what wasn't. What I could use and so on. So that was the impetus for investigating materials.

But I was a very, very sick person there for quite a while from using the lacquers. You know the first year I was using them I was very happy too. You know it was like sniffing glue all day long. I was just floating all over the place. But in those days you didn't think. You know, everybody was using this stuff

⁹⁹ Interview with Russell Woody by Jan Marontate, April 7, 1994. Tape 1, side 1.

¹⁰⁰ Joysmith taught a course on materials and methods of the Old Masters based on information compiled from artists' handbooks and miscellaneous sources drew on Ralph Mayer and Max Doerner as well as using a recipe by Maroger. He also was an avid user of the new synthetic materials.

and nobody thought about the toxicity of most of the materials. Gutiérrez didn't really give that much caution. He said you know "well this can bother you a little bit" but you know well nobody cared you see."¹⁰¹

Woody researched the topic by writing to paintmakers and chemical manufacturers, like paintmakers Henry Levison and Len Bocour, and of course the Rohm and Haas chemical company. Woody returned to the U.S. in 1960 where he taught high school in Virginia and lectured locally to artists on synthetic painting media. Eventually as a result of contacts with Levison he was hired as a consultant by the paintmaker. His master's thesis forms the basis for his first book on synthetic paints *Painting with Synthetic Media*, published in 1965 which had a technical appendix by Levison. He began touring the U.S. lecturing on synthetic media at colleges, universities and to various art groups in 1963. (His work for Henry Levison will be discussed in a later section.) Woody's career in art education is just one of the types of paths followed by participants in Gutiérrez' classes.

The career of another *Taller* participant shows a different path which was also instrumental in diffusing technical knowledge generated in the *Taller*. Arnold Belkin (1930-1993) a Canadian-born artist read about the Mexican muralists while taking evening classes at the Vancouver School of Art when he was a teenager.¹⁰² In 1948, when he was still seventeen, he travelled to Mexico City to study mural painting.¹⁰³ Belkin enrolled in *La Esmeralda* (The National School of Painting and Sculpture of the National Institute of Fine Arts) in 1948.¹⁰⁴ He was also a student with Gutiérrez at the National Polytechnic Institute and attended lectures at the National Institute of

¹⁰¹. Woody Interview 1994.

¹⁰². Belkin was born in Calgary, Alberta to a family which had immigrated from Russia.

¹⁰³. Belkin, Arnold. "Cronologia", *Contra la Amnesia. Textos: 1960-1985*. Mexico: Editorial Domés, Universidad Autónoma Metropolitana, 1986, pp. 249-252.

¹⁰⁴. There he studied under Carlos Orozco Romero, Andrés Sánchez-Flores and Agustín Lazo. Anonymous (preface by Emilio Alvarado Badillo). *Arnold Belkin. Obra Mural, 1960-1990*. Mexico: Campus Estado de México, 1990. Belkin Archives, courtesy Patricia Quijano Ferrer, muralist and widow of Arnold Belkin, San Bernabé Ocotepec, México, D.F.

Anthropology and History by the renowned anthropologist, and expert on primitive art Miguel Covarrubias. Belkin became an assistant to David Alfaro Siqueiros for mural projects and officially registered as a professional artist in Mexico in 1950.¹⁰⁵ In the early 1950s he began to do set and costume designs for modern dance productions, some of which were produced for television and continued intermittently to do some design work.

Belkin was intellectually inclined and he threw his energies into confrontational public disputes about new directions in contemporary art. During this decade (the 1950s) Mexican muralism came to symbolize the "Establishment" from the point of view of younger painters vying for recognition as members of ascendant avant-gardes. First of all then there was a rebellion against "official political art" and small galleries began to offer venues for struggling young artists. There were also growing hostilities amongst emerging groups, notably between various forms of abstractionisms (tachism, informalism, etc.), figurative painters and proponents of other forms of art (installations, found art, and so on). Belkin remained primarily a figurative painter developing a nuanced but sometimes strident philosophical and political approach to his art and action which he referred to as "neohumanism". In 1961, Belkin co-authored a manifesto in a publication called *La Nueva Presencia* (The New Presence) which he put out with Francisco Icaza and was a founding member of the group called "the Insiders" (*Los interioristas*).¹⁰⁶ The name was taken from a book which had appeared just after a particularly bitter series of confrontations over the imprisonment of Siqueiros and the inclusion of eight artists, all but one abstractions for the planned 1961 São Paulo

¹⁰⁵. Belkin worked on the old customs house in Santo Domingo and the Fine Arts Palace. Suarez, Orlando S. "Incorporacion anual de artistas. Relacion de Nombres", *Inventario del Muralismo Mexicano*, Mexico: Universidad Nacional Autonoma de México, 1972, pp. 386. Belkin 1986, p. 249.

¹⁰⁶. Other artists in the group, some of them much better known than Belkin at the time, were: Francisco Corzas, J.L. Cuevas, Leonel Góngora, Rafael Coronel, and Nacho López. Goldman, Shifra. *Contemporary Mexican Painting in a Time of Change*. Albuquerque: University of New Mexico Press, 1981.

Biennial.¹⁰⁷ The book posits:

"the opposition of two types of artists throughout history: non-Insiders, who are concerned with ideation, symbolism, abstraction, and formal problems, and those "exceptional non-conformists" who defy the climate of their time and initiate change: the Insiders."¹⁰⁸

The group was short-lived but illustrates the multi-dimensional character to debates related to the practice of art at the time.

Belkin was exceptionally successful as an artist in Mexico, as a muralist, easel painter, graphic artist and stage designer. As he himself put it, he succeeded beyond his wildest dreams:

"when I first came to Mexico, one of the first things I saw at the Palace of Fine Arts was a 50-yr [sic] retrospective of Diego Rivera. . . forty years later, there I was, having this show at the Palace of Fine Arts, and I kept thinking, not bad for a Jewish boy from Vancouver."¹⁰⁹

Although he developed his own artistic persona he was strongly influenced by Siqueiros whom he considered a model of the politicized artist. Belkin may be considered in some respects a descendent of Siqueiros.

Belkin taught mural techniques intermittently at various institutions in Mexico City and New York City beginning in about 1953, when he apparently took over a class from Gutiérrez at Mexico City College.¹¹⁰ During the 1960s and 1970s he spent much time in the U.S., residing in New York for about 8 years, where he participated in the "people's art" movement encouraging outdoor wallpainting in poverty-stricken areas.¹¹¹ One of the murals he did during this period commemorated a student protest at Kent State University which had resulted in tragedy after the National Guard attacked the

¹⁰⁷. Rodman, Sheldon. *The Insiders: Rejection and Rediscovery of Man in the Arts of Our Time*. Baton Rouge: Louisiana State Press, 1960.

¹⁰⁸. Goldman 1981, p. 42.

¹⁰⁹. Pringle, Heather. "Stealing Fire." *Equinox*, pp. 51-61. The exhibition took place in 1989.

¹¹⁰. Goldman 1981, p. 70.

¹¹¹. Belkin, Arnold. "Public Art and People's Art", n.d. mimeograph, 4p. Bocour Papers, "Selected Correspondence with Artists c. 1970s", Archives of American Art, Smithsonian Institution, Washington, D.C. (Most of the Bocour Papers are in the New York City Storage).

students. He did a number of murals in the U.S. sometimes working with inner city youth. He also remained very much involved with art circles, exhibiting and obtaining artistic honours. After his New York sojourn he settled definitively in Mexico where his work increasingly emphasized humanitarian, revolutionary and biblical themes. His shared his artistic vision and the technical skills with many colleagues, students and assistants over the years, increasingly stressing the collective aspects of mural painting.¹¹² As for his preferences in techniques and materials, Belkin, like many of the younger generation, eschewed the more toxic earlier formulations of synthetic media and became a devotee of the water compatible acrylic emulsion paints for artists made by Gutiérrez and others beginning in the mid-1950s. In New York he met paintmaker Len Bocour and used his paints too.¹¹³

Gutiérrez as Paintmaker: *Politec Internacional S.A.*

The new acrylic emulsion paint developed by Gutiérrez and others using Rohm and Haas' products and technical advice had such potential for use in art that Gutiérrez began to actively seek investors. He found Luis Miró who joined him as a partner in 1960.¹¹⁴ Miró describes himself as an investor and businessman, not an artist. The name chosen for the company -- Politec-- was a word play referring to the workshop at the National Polytechnic Institute (where the paint was developed), the fact that many different techniques could be executed with it, the family of chemical products (polymers) used to make the new paint, and of course to indigenous civilizations living in the area now occupied by Mexico City (Aztec). One of the employees was José Luis

¹¹². Including his widow, the muralist Patricia Quijana Ferrer, who is herself a muralist. Quijana Ferrer Interview 1994.

¹¹³. Belkin used Bocour's Aquatec acrylic paints for his mural *Against Domestic Colonialism* in New York City (between 9th and 10th Avenues on 46th Street). *ibid.*

¹¹⁴. Interview with Luis Miró by Jan Marontate, Mexico City, June 1994. The early records about the company were apparently misplaced during renovations and none could be located at the time of the author's visit to the company.

Gurdubay, a painter interested in the quality of artists' colours who conducted tests and later founded two paint companies of his own which produced synthetic artists' colours (Indart and then Evoart).¹¹⁵ After Gutiérrez' death, his widow¹¹⁶ and his partner Miró continued to run the company with the help of chemical engineers. Miró and his sons continued to own and operate the company to the date of this writing.

The company was founded to produce "plastic paints" but did not limit its production to water compatible acrylic emulsion paints,¹¹⁷ producing an oil-compatible acrylic resin, various varnishes, painting mediums, modeling paste (to build up textures) and, eventually, a range of traditional oil paints and watercolours in different grades (for artists and school children).

Widespread Experimentation with New Media in Mexico

As explained in Chapter 2, in Mexico interest in new techniques of painting using modern materials is closely aligned with discourse developed in the context of the muralist movement beginning in the 1920s. The desire to bring art to the people by moving it outdoors made technical innovation imperative since traditional artists' painting media could not withstand environmental change. But aesthetic preoccupations also surface in accounts of the search for new ways of painting, particularly after World War II. Prominent artists like Rivera, Orozco, Ruffino Tamayo, and a whole generation of new painters began to try synthetic paints and to experiment with recipes using new media developed by José Gutiérrez and others in the workshop.¹¹⁸ Whether the artist

¹¹⁵. Interview with Luis Filcer, an artist and partner with Gurdubay in a company producing primed artists' canvas for acrylics by Jan Marontate, Mexico City, June 1994.

¹¹⁶. Gutiérrez' widow by his second marriage. Ruth Semple Gutiérrez was an American-born artist and art teacher from Philadelphia who died in 1992. Miró Interview 1994.

¹¹⁷. Actually, Gutiérrez is thought by some to have produced a synthetic paint using vinylite before revising his formulas to make a more standard acrylic emulsion paint. Interview with Ron Hayes, May 1994.

¹¹⁸. Discussion of use of synthetic media by Rivera and Orozco follows. Tamayo apparently used acrylic paint made by José Gutiérrez for painting done for the UNESCO building in Paris. Gutiérrez

sought bright colours or dull ones, shiny or matte surfaces, thin veil-like glazes and stains or heavy impasto, there were new materials which offered promise. No comprehensive detailed list of all the different combinations used has been made or is likely to ever be produced. A superficial assessment of techniques conducted during an inventory of wallpaintings considered part of the Mexican muralist movement up to 1969 found that an enormous number of techniques had been employed: one hundred and forty seven (147) different techniques were enumerated in the 1286 murals studied.¹¹⁹

Although some of the early paintings done in Mexico with synthetic materials have survived quite admirably, occasionally painters exceeded the limits of the new media. For example, in 1951 Rivera executed an expansive sculptural and mural programme in waterworks located in a Mexico City large parkland. The River Lerma waterworks (*Cárcamo del Río Lerma*) combined mosaic-encrusted earth sculptures, painted reliefs and flowing water in an unconventional decorative project for the public utility. This work referred to Pre-Columbian earthworks and anticipated later American earth sculptures. Rivera used a synthetic resin (polystyrene)¹²⁰ as a medium for partially

1986, p. 5. Interviews with Patricia Quijana Ferrer, a muralist and the widow of Arnold Belkin, by Jan Marontate in Mexico City, June 1994; Conversations with Sylvia Pandolfi, museum director, and curators Edgardo Ganado Kim and Juan Cortes, of the Museo de Arte Alvar y Carmen T. de Carrillo Gil, Instituto Nacional de Bellas Artes, Mexico City, 17 June 1994.

¹¹⁹. This tabulation only used a gross classification of media (failing for example to distinguish between acrylic resins and emulsions) and grounds. The definition of a "technique" was the specific combination of materials used. In the case of paintings this would normally include a general category of media (acrylic, pyroxylin etc.) and a type of support (masonite, cement, fiberglass etc.) but murals done using tiles, glass mosaics, and other materials are also included. The classification system is ultimately rather loose due to unevenness in the degree of detailed specifications used for the definition of each technique. Even so the results of the survey indicate that experimentation with materials and techniques was a widespread practice. Suarez, Orlando S. *Inventario del Muralismo Mexicano*, Mexico: Universidad Nacional Autonoma de México, 1972, especially pp. 331-354.

¹²⁰. Javier Vazquez, a conservation scientist who participated in the analysis of the frescos describes this as a styrene-acrylic copolymer. Vazquez, Javier N. and Maria Teresa Hernandez Y. "Chemical Study of Materials Used to Construct the Mural paints "Water Origin of Life" painted by Diego Rivera in 1951", unpublished manuscript, CNCRPAM-INBA, San Ildefonso 60, Centro Historico, Mexico, D.F. Interviews with Javier Negrete Vazquez of the National School for the Study of the Conservation and Restoration of Cultural Property (*Escuela Nacional de conservación, Restauración y*

submerged frescos in an open cistern which he believed would never be eroded by the constant flow of water.¹²¹ However, mold and the action of the chemicals used in the water purification process almost completely erased the submerged portion of the frescos until a recent restoration. This was predicted by Gutiérrez, as reported in a widely distributed American newsmagazine:

"Mexican Artist José Gutierrez [sic], an instructor at the National Polytechnic Institute, has experimented with every kind of medium from ordinary house paint to the newest plastics to determine which can best withstand the elements. Last week Gutierrez made a gloomy prediction about Diego Rivera's latest mural in the water distribution chamber of Mexico City's new water system . . . Gutierrez' forecast: with 140 million gallons of water rushing past it every day the submerged part of Rivera's mural will completely disappear within ten years. Diego's comment: "Tell him to go to hell."¹²²

Also, some of the new media required very meticulous laboratory-style conditions for successful use. Severe restrictions on the formulation and execution were not suited to the working styles of many artists. Painters tended to ignore technical specifications leading to disastrous results. In particular, murals done using ethyl silicate tended to deteriorate rapidly because "a slight variance in the mixing procedure will cause the medium to fail".¹²³ Gutiérrez and Orozco were friends and eventually Orozco tried the new media, seeking advice from Gutiérrez and Rueda on formulas.¹²⁴ Orozco's 1946 mural *National Allegory*, for the Mexico City Teachers College (*Escuela*

Museografía 'Manuel del Castillo Negrete') in Mexico City by Jan Marontate. June 1994.

¹²¹. Catlin, Staton L. "Mural Census," Detroit Institute of Arts. *Diego Rivera. A Retrospective*. New York: Detroit Institute of Arts and W.W. Norton, 1985, p. 327.

¹²². Anonymous. "Wet Blanket", *Time. The Weekly Newsmagazine*. June 18, 1951, n.p. José Gutiérrez Papers, courtesy Josephina and Herbert Mintzer, Sunnyvale, California.

¹²³. See Russ Woody's inventory of pitfalls in the use of the silicates for mural painting. "Chapter 4/ Ethyl Silicate", in Woody, 1965, p. 139.

¹²⁴. Heydon 1950, p. 4; and Interview with Josephina Mintzer (daughter of José) by Jan Marontate, May 14, 1994. This collaboration appears to have occurred only in the late 1940s just before Orozco's death spite of the fact that Gutiérrez and Orozco had met in New York City in the 1930s. At the time of his retrospective at the National Institute of Fine Arts in Mexico City in 1947, Orozco credited the following sources for his technique: Cennino Cennini's treatise on painting (a 15th-century Italian book of precepts and techniques called *Libro dell'arte*), Mexican masons, the examination of ancient Mexican frescos, and direct experience. Suarez 1972, p. 344.

Normal para Maestros) is one of the best-known examples of the use of ethyl silicate. Orozco did not use Gutiérrez' usual recipe, but consulted the professors at the *Taller* about mixing metal with the silicate (aluminium, stainless steel and brass).¹²⁵ It is held up as an example of the longevity of this medium in the book Gutiérrez wrote in 1949 (which was published 7 years later). However, within a dozen years of its execution visitors who went to view the mural claimed that "very little of the paint could be seen".¹²⁶

The risk of technical failures using the new media, though an important preoccupation, was not the sole factor cited in resistance to using synthetic media in the arts.

Resistance to Synthetic Media in Mexico

There was resistance to adoption of synthetic media in the arts in Mexico. Arguments stressed not only the potential for immediate technical failures and the danger of trying to second-guess the permanence of the new media without first having them run the test of time. Also the new media often demanded profound changes in working methods:

"There were a couple of different groups in Mexico at that time and one group wanted to stick with the old ways of working with oil and contemplating and being more cognitive about the way they approached things. And then there was this younger group that was doing all the murals headed by Siqueiros who wanted everything down immediately so that they could work fast and it would dry in five minutes and at the end of it was permanent"¹²⁷

Another problem with the new paints had to do with social status. In the late 1940s and early 1950s in art schools, many professors emphasized the historical roots and prestige of artists' paints pointing to the lowly connections of synthetic paints with artisanal housepainters. To counter these objections, Gutiérrez pointed to the "newness" of the

¹²⁵. Heydon 1950, p. 4.

¹²⁶. Woody 1965, p.139.

¹²⁷. Woody Interview 1994.

products which could only be used by innovative, knowledgeable artists and implied that elitist tendencies might be at the root of criticism about using a product made by the masses :

"No art supply stores sell these products. They are so new that they must be acquired from factories making plastics or chemical products. Perhaps that is why they are attacked so much. I recall that when I arrived in Mexico, Antonio Ruiz, the director of the Esmeralda, said: 'These materials are good for painting doors, but we continue to use oil in the tradition of the Venetians.' I could demonstrate that with the paints 'for doors' and 'for boilers and submarines' have excellent plastic qualities, magnificent textures, glazes and luminosity that is not possible to obtain with oil."¹²⁸

At this time, just before he began to produce his own brand of the new paints, Gutiérrez was working hard to promote interest and acceptance of synthetic media. He repeatedly made connections between the new media and oil paints, stressing that the fact they had not yet been commercialized as artists' media should be ignored as an artistic consideration. In his words:

"After all, oil paint was not put into tubes until about 200 years after its invention. During all this time it was stuffed into bull's intestines and squeezed out of these as needed."¹²⁹

Although Gutiérrez was enthralled by the broad possibilities of the new media, he increasingly made it clear in his later years that synthetic paints should augment rather than replace traditional artist's painting media. In an interview with a reporter from the Rohm and Haas chemical company just before his death Gutiérrez sang the praises of plastic paints but reminded readers of the pleasures of traditional media:

"I do not suggest that plastic paints are a complete replacement for traditional media such as oils. They do represent, however, a new dimension in paints, a source of new excitement and ideas. Acrylic paints make possible 'accidents' of color and texture that are virtually impossible to achieve with slower drying, less flexible paints. My purpose in making these paints available has been to arouse the interest of the artist in the vast possibilities of these 20th century

¹²⁸. Bambi. "Obras de Arte a prueba de Bomba H. Duran más de cinco siglos." *Excelsior*, 10-B, Monday September 28, 1953, n.p. Gutiérrez Papers, courtesy J. and H. Mintzer.

¹²⁹. Heydon 1950, p. 3.

materials."¹³⁰

As for the acceptance of the brand of paints--Politec-- which Gutiérrez developed,

Roukes commented:

"A lot of the artists in Mexico were a little dubious about the quality of materials that were produced in Mexico. You know they thought as we do that a genius must be at least a hundred miles away."¹³¹

Yet Politec was and is still widely-used in Mexico. It was never well-distributed in the U.S. or Canada, although there was for a time an American distributor based in California.¹³²

Concluding Remarks about the *Taller* and Gutiérrez

Gutiérrez' research was centered on immediate applications of modern materials in the art. His methods were those of an innovative artist with an interest in techniques, not a scientist, for which he made no apologies. During his almost 25-year sojourn in the New York City area he studied art and initiated contacts with chemical companies which he maintained after returning to Mexico. He participated in the Siqueiros Experimental Workshop in New York and stayed in contact with Siqueiros who remained an outspoken proponent of modern materials. Siqueiros' studio practices appear to have served as a model for Gutiérrez' own free-wheeling style of investigation which made him popular with the many artists and art students who participated in the *Taller de ensaye de materiales de pintura y plásticos* in Mexico City.

Gutiérrez' story provides a glimpse into ways information was obtained and diffused about technical matters in the arts during this active period of innovation.

¹³⁰. Anonymous. "Mexico . . . Land of Murals", *Rohm and Haas Reporter*, Volume XXVI, Number 6, November-December 1968, p. 8.

¹³¹. Roukes Interview 1994.

¹³². Some American and Canadian artists used it however, among them, Keith Boyles, Nathan Oliviera (of Stanford), and Claude Blain (an artist who participated in the Mexico City *Taller* and expatriate Frenchman who apparently settled in the Montreal area). Roukes Interview 1994.

He shared information freely with artists and art students from many countries at least until near the end of his life when he became a painter.¹³³ Several of his students wrote influential artists' handbooks on the new media.¹³⁴ Through lectures, travels and his many consultations with artists he communicated an unbounded enthusiasm for the new materials but always with the voice of an artist.

The Center for Research on Materials of the Artist and Conservator at the Mellon Institute in Pittsburgh

The Center for Research on Materials of the Artist and Conservation in Pittsburgh, founded in 1950 contrasts starkly with the artistic orientation of Gutiérrez' *Taller*. At the centre, highly specialized scientists undertook advanced research on art materials using state-of-the-art-equipment.

Origins of the Center: the National Gallery of Art (Washington) Project

The Center began as a project commissioned by the National Gallery of Art in Washington, D.C..¹³⁵ The project started modestly when John Walker, then chief curator (and later director) of the gallery approached the Mellon Institute in Pittsburgh about establishing a research laboratory to facilitate the development and introduction of new materials in the field of art.

Walker had consulted eminent experts in the field of conservation, like conservator Rutherford J. Gettens and artists' handbook author Ralph Mayer, while developing the idea for the position. According to Gettens the initial idea was to set up a laboratory at the Mellon Institute "for the study of artists' materials which might also

¹³³ His formulas of acrylic paints for artists produced by his company *Politec* have not been widely diffused.

¹³⁴ Though influential the formulas and practices advised have been subjected to criticism by conservators as questionable for the longevity of the painting. See "Discourse on New Media in Technical Advice Columns and Artists' Handbooks" in Chapter 6 and Table 11.

¹³⁵ Interview with Robert L. Feller and Ruth Johnson Feller, April 27, 1994.

serve later as a consulting laboratory for the National Gallery in conservation problems".¹³⁶

-- Robert Feller, a recent Ph.D. graduate in physical-organic chemistry from Rutgers University, was awarded this fellowship in 1950. The Art Research Project became the Research Center on the Materials of the Artist and Conservator, with long-term grant support.¹³⁷ Feller was appointed Senior Fellow in 1963 and remained there until his retirement in 1988.¹³⁸ Over the years the institutional context changed when the institute became part of the Carnegie Mellon University. The Project became "the longest continuous research effort in [the United States] directed specifically toward the development of new materials and techniques for the artist and the museum conservator".¹³⁹

The Institutional Context: Focus on Science and Industry

Although this project was undertaken at the behest of the National Gallery of Art, the context provided by the Mellon Institute was important for Feller in his accounts. At the Institute the focus was on participation in science and industry as central forces in the production of knowledge and wealth. Asked to comment on the history of the project he began by explaining the founding principles of the Mellon Institute for Industrial Research:

"The Mellon Institute took contracts to do research for people. . . The Mellon Institute was almost the first . . . industrial research laboratory in America. . .

It grew out of an idea [at the time of the first world war] that if industries wanted to make something out of motor oil or if they had waste

¹³⁶. Letter from Rutherford J. Gettens to Ralph and Bena Mayer, April 10, 1950. "Feller-Gettens, 1950-1958" Folder, Gettens Archives, Freer Gallery of Art, Smithsonian Institution, Washington D.C.

¹³⁷. Initially this was funded with grants from the Old Dominion and Avalon Foundations. Gettens, "Teaching and Research in Art Conservation", *Science*, Volume 133, No. 3460, 1961, p. 1213

¹³⁸. Dr. Paul Whitmore replaced him. Interview with Dr. Robert L. Feller and Ruth Johnson Feller, February 10, 1994 and April 27th, 1994

¹³⁹. Feller, Robert L. "Combining Art and Science: The National Gallery of Art Research project in Artists' Materials", *Rutgers Alumni Monthly*, Reprint from November 1965 n.p. Archives Center, Conservation and Analytical Laboratory, Museum Support Center, Smithsonian Institution, Washington, D.C. Document #7029.

material from their process and they wanted to know if they could make a profit out of their waste material . . . that we should apply full-fledged scientists, academically-trained scientists to these problems.

And this was a very unique idea in its time. The Germans were doing it .. but it had not been practiced in America."¹⁴⁰

The Institute emphasized both basic research and applications, although by 1950, at least in this art project, it would seem that immediate applications were not an issue. When Feller started he recalled that there were about thirty-five other research fellowships, some sponsored by companies producing chemical products used in art (like Union Carbide) which put him into direct contact with industry. The Institute provided laboratory equipment and technical assistants making it possible for an organization to commission research and start immediately without the worry of outfitting a laboratory. According to Feller, the choice of the Mellon Institute as a location for research on art materials was partly a consequence of the fact that the founder of the Mellon Institute, Andrew Mellon, was also the principal benefactor of the National Gallery in Washington.

Defining a "Field of Specialization" for Technical Studies of Materials at the Center

The Institute fostered a sense of membership in the scientific community in various ways, notably by providing an institutional context where both pure (or fundamental) research devoted to the advancement of knowledge and applied research cohabited. There Feller developed a strong sense of his own "field" of research, that of research chemist in materials science and "conservation scientist". He later described himself as a member of a small group of scientists following in the footsteps of Rutherford J. Gettens and George Leslie Stout who, as mentioned in the earlier discussion of New Deal art activities, had begun a programme of technical studies in conservation prior to World War II, but whose work had been interrupted by the

¹⁴⁰. Interview with Robert Feller by Jan Marontate, April 27, 1994.

war.¹⁴¹

Beyond the Mellon Institute, Feller participated in a community of scientists and conservators. He was an active member of the American Chemical Society, and soon joined associations for conservation science in America as well. These organizations and the part they played in the development and diffusion of knowledge of synthetic media in the arts are in Chapter 6.

Feller seldom had any personal contact with artists, and particularly in matters which directly concerned his research. As he put it when discussing his studies of artists' varnishes:

"I look upon my job, not to recommend any particular varnish or resin, but to describe the various types. The more we seek to measure and describe their properties, the better the artist will be able to make a selection to suit his own needs."¹⁴²

Feller's discourse stresses his commitment to scientific methods. He emphasizes a sense of distance from art and artists, stressing the differences between artistic and scientific preoccupations. He appears to have preferred to concentrate on clearly-defined research questions rather than the less systematic concerns raised by artistic practice. In his words:

"I didn't work with artists. . . That's a whole other field you might say. The practicing artist has other problems on his mind in a way. And you see because there was the American Institute for Conservation and the International Institute for Conservation there were people interested in the problem I was working with so that you had someone you could work with and talk to professionally.

If you worked with artists, each artist has his own needs you might say and so it's much more difficult to get on with your research. . ."¹⁴³

Yet he did have some contact with artists indirectly via conservators and in

¹⁴¹. According to Feller there were very few people sharing his approach when he started. He that there was somewhat in California also engaged in related studies named Charles Muscovitch in California (who he recalled may have been at UCLA at Davis.) He also mentioned Nathan Stolorow, a Canadian conservator trained in England with whom he later collaborated. Feller Interview 1994.

¹⁴². Feller quoted in Chaet, Bernard. "Studio Talk: The Problems of the Final Varnish: Interview with Andrew Petryn", *Arts*, Volume 31, October 1975, pp. 62-63.

¹⁴³. Feller Interview 1994.

multidisciplinary settings. For example, activities in the Inter-Society Color Council (ISCC) brought Feller into communication with representatives of various artists' organizations and paintmakers, notably artist Joy Turner Luke, who represented National Artists' Equity Association and paintmaker Henry Levison. Luke commented that Feller was very open to discussion of technical matters with artists like herself and would take the time to explain details but "his was not a name that would be known in the art field."¹⁴⁴ As time passed he was sometimes sought out for expert advice by arts' organizations.¹⁴⁵

Ruth Johnson (later Johnson Feller), another trained scientist joined the research laboratory at the Center and was very active in the development of testing techniques for artists paints, working closely with artists and paintmakers in the 1970s.¹⁴⁶ Johnson was a chemist who specialized in colour measurement, and became involved with issues related to truth in labelling of artists' materials as a results of contacts with Luke in the ISCC.

Overall, however, the Center appears to have had few direct contacts with users or makers of artists materials *per se*. By way of explanation of lack of contact with art materials manufacturers Feller explained:

"We were doing research, we were not trying to manufacture anything"¹⁴⁷

Even in its research, the center did not undertake extensive analysis of materials made specifically for artists, reasoning that industrially-produced products were the basic components used by artists' materials manufacturers. Therefore by studying industrial products they intended to produce findings which were applicable to a wider

¹⁴⁴. Interview with Joy Turner Luke by Jan Marontate, May 28, 1996.

¹⁴⁵. For example he wrote and explanation of stages in drying of polymer emulsions (dispersions) used in water-borne acrylic paints for the journal of the College Art Association. Pomerantz, Louis, Goist, David C., and Feller, Robert L. "Conservators Advise Artists", *Art Journal*, XXXVII, Fall 1977, pp.35-39.

¹⁴⁶. She is credited by Luke with solving a measurement problem related to tinting strengths. Interview with Joy Turner Luke, April 29, 1994.

¹⁴⁷. Feller Interview 1994.

range of cases. Feller was not interested in the practices and problems of small artists' materials manufacturers:

"No artists' materials company ever made any of these polymers. They go to -- Rohm and Haas and they say "what've you got that we can sell" . . . and so even the manufacturer -- the artists' materials company-- doesn't know exactly what the chemistry is of the resin they're selling."¹⁴⁸

Thus the scientific culture prevalent at the Mellon Institute appears to have dominated decisions regarding the way the Center functioned.

Feller did remain in contact with conservators at the National Gallery, and required their approval for his different projects. In this respect too, however, Feller directed the research at the Center towards problems which were conducive to following routines of scientific laboratory investigations. His studies were of interest to a growing coterie of researchers in materials science and conservators with some knowledge of chemistry.¹⁴⁹ His work appears to have become increasingly geared to producing publications for an audience of conservation scientists and students of art conservation who were adopting the relatively new "scientific" approach to conservation. He also published in journals of chemistry, and materials science. Above all, he considered himself a scientist and hoped to communicate with others who shared his assumptions about the basis of scientific knowledge and practice:

"One way scientists influence people is to publish and let other people read and . . . that's your influence. You can't sit down . . . and tell people how to run their business. . . So you publish and let the world know about it."¹⁵⁰

Interestingly, in spite of his insistence on his identity as a laboratory scientist, Feller produced a number of expository texts accessible to the general public (based on historical research or on compilations of specifications provided by others) as opposed to reports of laboratory findings done at the Center.¹⁵¹

¹⁴⁸. Feller Interview 1994

¹⁴⁹. See Chapter 7.

¹⁵⁰. Feller Interview 1994.

¹⁵¹. For example: Feller, Robert L. *Color Engineering*, November-December 1966, pp. 20-23; Feller,

Focus on Modern Materials

The research programme undertaken at the Center appears to have been driven by Feller's conception of what constituted a valid, publishable problem in the chemistry of art and materials science. From the beginning the accent was on applications of scientific research to the practice of art and art conservation. Indeed initially the purpose of the fellowship was purportedly to seek

"new materials and techniques for use in the fine arts, both for original work and the conservation of museum objects".¹⁵²

But the investigations followed the logic of fundamental research on materials. At first the emphasis was on modern materials:

"Besides improving methods, today there also exists the wonderful possibility of creating new materials. Modern chemistry is able to synthesize entirely new substances: synthetic fibers, plastics, special glasses, artificial rubber, and the like. Perhaps the most uncultivated area of all in the application of science to problems in the fine arts has been in this matter of introducing new materials. In painting, for instance, most of the materials in use today have been tradition for hundreds of years." ¹⁵³

Feller defended his insistence on conducting in-depth studies of the basic components in artists' materials (for example, industrial products and pigments), explaining that it was necessary to assess modern materials from the point of view of the requirement for permanence if they were to be used in art:

"The development of a new and useful substance is always a difficult task. With artists' materials there is the added restriction that they must possess great durability. There is also the problem of handling quality. By this is meant the facility with which an artists can paint or carve in his medium. . . Whereas scientists are able to recommend very durable substances that might be tried by the artist, these are generally found to be difficult for him to use without special modification. Industry is constantly seeking new materials, but seldom with the

Robert L. "Scientific Examination of Artistic and Decorative Colorants", *Journal of Paint Technology*, volume 44, Number 566, March 1972, pp. 51-56.

¹⁵². Feller, Robert L. "The Conservation of Paintings", photocopied reproduction of unidentified publication, no date, pages 370-373. Archives Center, Conservation and Analytical Laboratory, Museum Support Center, Smithsonian Institution, Washington, D.C. Document # 7148, p. 370.

¹⁵³. Feller, Robert L. "Science Serving the Fine Arts", photocopied reproduction of unidentified publication, no date, pages 46-50. Archives Center, Conservation and Analytical Laboratory, Museum Support Center, Smithsonian Institution, Washington, D.C. Document #7149, p. 46

artist in mind".¹⁵⁴

Feller's research on modern materials was significant at the time since in the words of an artist active in research about the permanence of modern art materials:

"a lot of conservators are just simply not interested in modern materials and when we were getting started he was one of the few people who were knowledge other than the manufacturers but he was willing to take time."¹⁵⁵

Feller introduced another research concern very early in his career, namely; the investigation of traditional materials which he defended as necessary in order to understand and create new ones.

Conservation Issues and Research on Synthetic Coatings at the Center

Due to the institutional context and his own inclinations, Feller's orientation was well suited to an conservatorial concerns, where scientific methods were increasingly being applied at mid-century. Even though, the Center does not appear to have specifically undertaken the development of artists' paints, ground-breaking research was done on varnishes and pigments.

The first major research project undertaken by Feller was the study of protective coatings with the goal of developing an artists' varnish based on synthetic resins that would not crack or yellow as readily as do varnishes made with natural resins.

Varnishes, the protective coatings applied as the last step in the production of a painting, concerned both conservators and artists. From the point of view of conservation varnishes can provide the first line of defense in exhibited work or the death knell for the painting (if they cannot be removed when necessary). The varnish problem had been suggested by conservator Rutherford G. Gettens as a matter of some urgency for the field of conservation.¹⁵⁶

¹⁵⁴. *ibid.*

¹⁵⁵. Luke Interview 1996.

¹⁵⁶. Letter from R. Feller to R.J. Gettens, June 12, 1952, "Gettens-Feller 1950-1958" Folder. Gettens Archives. Department of Art Conservation, Freer Gallery of Art, Smithsonian Institution, Washington

Concerns raised by curators and conservators about dramatic colour changes in recent paintings in the National Gallery of Washington's collection had also prompted Feller to investigate whether the changes were due to impermanent pigments or other factors, like yellowing of varnish.¹⁵⁷ For some types of painting varnishes may merely be a protective coat which barely changes the physical appearance of the work, but in many cases the application of a varnish changes the look of the painting, the quality of the surface and the perception of depth and colour. Feller studied both traditional and new materials, comparing their characteristics (examining, for example, viscosity, the effect of application techniques on their appearance and factors controlling brittleness). He concentrated on the study of spirit or "solvent type" varnishes, consisting of a resin dissolved in a solvent, seeking a coating which would remain easily removable, colorless and tough.¹⁵⁸

His study of synthetic media was prompted by this widespread interest in the potential of new materials for providing safe reversible treatment options for painting conservation. The principle of "reversibility" in conservation is a complex one since:
 "the term is used . . . in the sense that a conservation method can be reversed . . . so that the object can be recovered in its original state".¹⁵⁹

Synthetic media (especially polymers) offered tantalizing possibilities as protective films, adhesives and so on.

In addition, as Feller observed, the choice of polymers in varnishes as a research topic was advantageous because varnishes posed a conceptually simple problem to investigate by comparison with some of the more complex formulations used in pigmented painting materials and an urgent one given the expanding use of synthetic

D.C.

¹⁵⁷ Feller, Robert L. "Color Change in Oil Paintings", *Carnegie Magazine (reprint)*, October 1954, pp. 1-6. Archives Center, Conservation and Analytical Laboratory, Museum Support Center, Smithsonian Institution, Washington, D.C.

¹⁵⁸ Feller, 1969, page 2 (unnumbered)

¹⁵⁹ ICOM, *Synthetic Materials Used in the Conservation of Cultural Property*, International Centre for the Study of the Preservation and Restoration of Cultural Property, Rome, 1963, p.13.

media:

"People were worried about synthetic varnishes in those days. They didn't know what they were and they didn't know whether they were safe to use and they didn't know whether they could be improved. . . From a scientists' point of view it's a fairly simple problem. Picture varnishes only consist of a solvent, and they consist of a resin. That's all. And to start out to do research you might as well pick a simple problem."¹⁶⁰

In 1957 Feller participated in a conference of conservators held at the Intermuseum Conservation Laboratory in Oberlin, Ohio on protective coatings. As a result of that conference Feller co-authored a book, with Nathan Stolow (then at the National Gallery of Canada), and Elisabeth H. Jones called, *On Picture Varnishes and Their Solvents*. Published in 1959, it became a landmark text in conservation science and is still a required reading in most art conservation programmes.¹⁶¹

Feller continued to conduct research related to synthetic media for some time, producing numerous articles for conservators. Often these were simplified explanations of the physical and chemical properties of new media, such as the (acrylic) polymer emulsions.¹⁶² Feller's research led to the development of a new picture varnish.¹⁶³ It

¹⁶⁰ Feller Interview 1994.

¹⁶¹ The preliminary edition was published by the Intermuseum Conservation Association, but it is the revised second edition published in 1971 by the National Gallery in Washington which reached a wide international audience.

¹⁶² These tend to be literature reviews of research in applied polymer chemistry rather than reports of original research. See for example Feller, Robert L. "Polymer Emulsions", *Bulletin of the American Group of the International Institute of Conservation*, Volume 6, Number 2, 1966, pp. 24-26; Feller, R.L. "Polymer Emulsions II", *American Institute of Conservation Bulletin*, 1966, pp. 18-19. Photocopy from Archives Center, Conservation and Analytical Laboratory, Museum Support Center, Smithsonian Institution, Washington, D.C. Document #7280; and Feller, R. L. "Polymer Emulsions III", photocopy from *American Institute of Conservation Bulletin*, 1969, p. 15-17. Archives Center, Conservation and Analytical Laboratory, Museum Support Center, Smithsonian Institution, Washington, D.C. Document #7281.

¹⁶³ He recommended the replacement of the problem-prone ingredients with Acryloid B-72 a thermoplastic acrylic ester resin and the polyvinyl acetates. He first developed a picture varnish, which he began sending to conservators for testing in late 1953, "based on isoamyl polymethacrylate dissolved in naphthenic petroleum solvent". By December of 1955 he had become aware of cross-linking problems with isobutyl, isoamyl and several other methacrylate polymers. Untitled draft of press release with handwritten date "October 1954" and Letter from Feller to Gettens, December 13, 1955. "Feller-Gettens Correspondence" Folder, Gettens Archives, Freer Gallery of Art, Smithsonian Institution, Washington, D.C.

is discussed further in Chapter 6.

The Study of Photochemical Deterioration of Synthetic Media and Research on Pigments

This first subject of investigation (synthetic resins) led to the second major area of investigation of the center at the Mellon Institute-- photochemical deterioration of synthetic materials. (See Figures 5 and 6.) These investigations were partially inspired by suggests of administrators of the National Gallery, notably Ernest R. Feidler who encouraged Feller to turn its attention to photochemical damage in museums.¹⁶⁴

Many of the new synthetics media were valued by artists and conservators for the clarity of the paint film they formed when first applied, allowing artists to exploit the hues of the pigments and the reflectivity of grounds. But as some contemporary paintings aged, changes were observed.

While studying the aging of varnishes Feller had noticed that certain methacrylate polymers had a tendency to become insoluble due to the effects ultraviolet radiation (which was then thought by Feller to be a result of a chemical change in the polymer termed "cross-linking").¹⁶⁵ In other words coatings which are reversible at the start can become irreversible due to the effects of light. This presents a problem if the polymer is to be used as a protective coating which could be removed, because the insolubility renders the coating difficult or impossible to remove without damaging or destroying the object.¹⁶⁶ (This is exactly the opposite effect desired since the intention

¹⁶⁴ Feller 1965.

¹⁶⁵ Feller, R. L. "Early Studies on the Cross-linking of Polymers" in Feller, R. L., Stolow, N. and Jones, E.H. (editors). *On Picture Varnishes and Their Solvents*, 2nd edition, Cleveland: Case Western University, 1971, pp. 195-201; and Feller, R. L. "Problems in the Investigation of Picture Varnishes" in Brommelle, N.S. and Smith, P. (editors). *Conservation and Restoration of Pictorial Art*, London: Butterworths, 1976, pp. 137-144.

¹⁶⁶ Studies have shown that all of the variants of some types of polymers (acrylates) cross-link on ultraviolet exposure but the ones more commonly used in acrylic paints for artists (methacrylates) exhibit differing behaviour which is affected by temperature and oxygen too. In other words varnishes made with them probably will not all become impossible to remove. Horie, C.V. *Materials for Conservation. Organic Consolidants, Adhesives and Coatings*. London: Butterworths, 1987. pp. 103-

in applying reversible varnishes is that when the varnish becomes dirty or yellows, it can be removed with no effect on the paint coating or ground below.) In particular Feller's research showed problems with the use of a specific type of acrylic which was used in "a Du Pont product that was very popular and that was being used by a number of companies to make a picture varnish . . . And we discovered cross-linking somewhat by accident as many scientific [discoveries] are done. Basically we realized the importance of this phenomenon and no-one had really realized at the time that these varnishes would become insoluble in time."¹⁶⁷

Industrial laboratories were primarily interested in toughness and adherence of coatings and hadn't investigated the conservatorial repercussions of this characteristic of the chemical product. Feller's research made conservators aware of problems with specific polymers used in art conservation and in painting materials (although there is still some debate about the interpretation of his findings).

Also of concern to curators and conservators was the possibility of fading of pigments caused by natural and artificial light. This was indeed a major research area at the Mellon center for many years and Feller became a respected expert on artists' pigments, editing an influential text for conservators in this area.¹⁶⁸

Concluding Remarks About Feller and the Center

The Center for Research on Materials of the Artist and Conservator in Pittsburgh under the leadership of Feller investigated questions of color measurement, permanence of pigments, spirit varnishes and cross-linking phenomena in methacrylate polymers (a major category of synthetic media used in artists' paint). This type of research had a powerful impact on discourse about the definition of the field of conservation science notably within a growing body of laboratory scientists as we shall

¹⁶⁴.

¹⁶⁷. This was normal butyl methacrylate.

¹⁶⁸. Feller, Robert L. (editor). *Artists' Pigments. A Handbook of their History and Characteristics*. New York/Washington: Cambridge University Press /The National Gallery of Art, 1986.

see in the following chapter. Feller's work was highly technical and more accessible to readers trained in science than to artists, therefore its effects in the arts were felt through networks of chemists and conservators rather than begin immediately translated into artmaking practices by painters. It also has had some practical repercussions for the hands-on conservator regarding choices of specific products and because of conservation concerns his findings have been followed by paintmakers.¹⁶⁹ His work has inspired some other subtle but crucial changes for the conservation of paintings as well. For example, his observations on photochemical damage led to the use of filters for lighting in art galleries and museums.

Conclusion Comparing the Two Research Centers

Almost like C.P. Snow's depiction of the distance between arts and sciences in his book *Two Cultures* -- so extreme were the differences of orientation which developed in these two centers.¹⁷⁰ Gutiérrez' and members of his *Taller* appear to have been highly influential in diffusion of information about new media and in the propagation of their use in painting. Through his free-wheeling attitude to artistic "experimentation" he evinced a deep commitment to the emancipatory potential of creative activity and little interest in scientific rigour as a process of discovery. Feller on the other hand was a key figure in an emerging scientific orientation within art conservation. Although Feller's discourse reveals an apparent immersion in a set of fairly rigidly-defined knowledge claims, as Bruno Latour, Steve Woolgar, Karin Knorr-Cetina and others have argued, the scientific knowledge and practice is "constitutively social to its core".¹⁷¹ Indeed the highly specialized scientific discourse adopted by

¹⁶⁹. In particular his work pointed to the potential for problems with varnishes made with Du Pont products based on normal butyl methacrylate.

¹⁷⁰. Snow, C.P. *The Two Cultures and the Scientific Revolution*. Cambridge: Cambridge U. Press, 1959.

¹⁷¹. As many studies have shown this may be considered merely a stage in the historical pattern of an

Feller, formed within the context of the Mellon Institute, was indicative of attitudes which had also begun to be appropriated, understood and shared by a growing network of art-conservators and paintmakers.

area of investigation. See for example: Pickering, Andrew (editor), *Science as Practice and Culture*. Chicago: University of Chicago Press, 1992.

CHAPTER 6 – Enduring Colours for the Artist: Paintmaking, Conservation and Standards

As modern art became an increasingly valuable cultural and economic commodity interest grew in the permanence of art materials and in conservation techniques for recent art. The push to set standards for art materials began to emerge in the late 1930s, with efforts spearheaded by government bureaucrats, artists' groups, manufacturers and conservators. Concern by collectors about the permanence of their purchases was certainly an important issue but there were other non-aesthetic enabling conditions for the rise of interest in standards related to art materials, among them: the sense of artistic professionalism fostered by New Deal art projects, public questions about the quality of materials used in educational programs and manufacturers' complaints about unfair practices of competitors.

Artists, paint manufacturers and art conservators in major museums had begun to work in collaboration with the U.S. National Bureau of Standards on the development guidelines for the regulation of artist's paints during the New Deal art projects. These efforts continued after the war. Professional and trade associations were founded which provided a forum for information exchange and the promotion of standards, in the United States and internationally. In the case of the art materials trade, organizations also provided an arena for competition. Discourse on standards covered behaviour and practices as well as products, both traditional and modern.

These efforts to establish organizations in areas of activity concerned by technical practices in the arts (notably in conservation and paintmaking) provided a context for discourse on new media in painting. When like-minded "experts" in their respective fields gathered, finding out about new techniques and materials was on the agenda. One connection of synthetic media to general concerns about quality and standards appears almost simple-minded in retrospect: confidence in standards implied trust in "objective" scientific testing methods and the new media were associated with

this type of technological progress because they had been developed through scientific research. Indeed, modern materials were viewed positively by many and avidly investigated by prominent conservators for their potential to provide solutions to technical problems (in restoration in particular). Similarly, innovative paintmakers concerned with matters related to permanence also began examining new media for possible appropriation in making artists' colours. Of course, not all proponents of "quality" art materials favoured the adoption of new materials and this is reflected in the evolution of work on standards as we shall explain.

Several major figures involved in discourse about 'plastic' paints, and in the development and diffusion of synthetic paints for artists (or information about them) worked actively on standards for art materials. This section introduces some of these prominent figures and the institutional structures which they helped to create.

First the contributions of pioneer paintmaker Henry Levison to the development of synthetic paints for artists and his research on testing procedures for use in the establishment of standards will be discussed in connection with organizations founded to address these issues.¹ Levison's preoccupations with the application of scientific practices to artists' paints were closely related to the synchronous transformation of interests and practices in art conservation as "art scientists" gained increasing authority. Next, this trend towards specialization in art conservation will be considered in connection with the contributions of art conservators to the knowledge and use of synthetic media. A third section treats the work of independent (largely self-taught) technical experts on art materials and techniques will be briefly focussing in particular on writers of technical handbooks and advice columns in mass art magazines (like

¹. Here we will consider both business and scientific connections through the National Art Materials Trade Association, the Standing Committee of the Recommended Standard for Artists' Oil Paints, the Inter-Society Color Council and the Sub-Committee for Artists' Paints and Related Materials of the American Society for Testing and Materials.

Ralph Mayer and Frederic Taubes) who made efforts to bridge the gap between scientific investigators and art students. Though not always accurate in their science and sometimes downright emotional in their caveats, they cannot be ignored. They were outspoken and influential in the assessment of quality, participating in the drive for improved standards in artists' materials and promoting updated education about technical practices in the arts. Key social organizations and issues involved in the establishment of standards for artists' paints will be briefly reviewed since they give evidence of emerging concerns, demands and doubts on the part of artists, conservators, paintmakers and other which add a new dimension to our consideration of the place of new materials in artistic practices.

Henry Levison Permanent Pigments and Water-borne Acrylics for Artists

Henry Levison (1906-1988), a pioneer in the development of water-borne acrylic paints for artists, was a prominent figure in initiating efforts to develop standards for art materials based on scientific testing.² He was the only one of the early innovators in synthetic paintmaking for artists to hold a degree in chemistry. His characteristic blend of scientific method, business acumen and determination to improve the quality of modern art materials guided his development as a businessman and later as a researcher cum activist in the field of artists' paints. The story of Levison's work on paints and testing procedures must be placed within the context of his many years as an entrepreneurial paintmaker.

² Levison was probably the first paintmaker to produce a complete line of water-borne acrylic paints for artists. The issue of priority is somewhat sensitive and there are disparities in documentation about the dates. Levison and Gutiérrez were apparently working with the same Rohm and Haas acrylic emulsion product (Rhoplex AC-33) in 1953-54 which had been sent to them by the chemical company. However it appears that Gutiérrez was trying to use some form of vinyl in combination with the acrylic emulsion at first which led delays in formulation. Norman Gulamerian of Utrecht Linens claims that he was the first to produce a water-borne artists' acrylic in about 1957. Conversation with Norman Gulamerian by Jan Marontate, May 18, 1994; Interviews with Russ Woody by Jan Marontate, April 7 and 14, 1994; and Gutiérrez, José L. and Nicholas Roukes. "Pioneering Plastic Paints", *Painting with Acrylics*, New York: Watson-Guption, 1966, pp. 24-27.

Levison's Background and the Genesis of the Idea to Make Artists' Paints

Henry W. Levison was born in Cincinnati, Ohio. He earned a Master of Arts degree in chemistry from the University of Cincinnati, graduating in 1928, just before the devastating stock market crash which heralded the Great Depression.³ Upon graduation Levison worked for a short time in printing inks and then joined his father and brother in the family business in Norwood, a municipality adjacent to Cincinnati. Within a few years he was bored and not making much money. In his words:

"after receiving my Master's Degree in chemistry in 1928 . . . I . . . went with the family company, the American Lacquer Company. . . But . . . in 1933 the commercial manner of making lacquers got to me and since we didn't have any business anyway I started Permanent Pigments Company making artists' colors . . ." ⁴

The idea to make artists' paints appears to have been inspired by the confluence of several factors: entrepreneurial drive, intellectual curiosity, contact with a chemistry professor interested in art, and the prompting of friends who were artists in Cincinnati. Levison recalled that at the time:

"A lot of my friends were artists, young artists in Cincinnati. . . I knew them before they became artists . . . and I'd demonstrated the making of cadmiums and so forth to them."⁵

Levison was profoundly influenced by Dr. Martin Fischer, a professor at the university who lectured and published on the need for artists to work with colors that would not change.⁶ Indeed even the name of the company reflects Fischer's influence, echoing the title of one of Fischer's best-known popularizations of

3. Anonymous, "Untitled Biographical Note." in Levison, Henry W. *Artists' Pigments. Lightfastness Tests and Ratings*. Hallandale Florida: Colorlab, 1976. [endspiece, n.p.]

4. Interview with Henry Levison by Bert Marshall, November 30, 1986. Courtesy Bert Marshall, Conservator, Hillwood Museum, Washington, D.C. [Tape transcribed by Jan Marontate.]

5. Levison and Marshall, 1986, p. 1.

6. Fischer held a doctorate in medicine and also taught introductory physiology at the University of Cincinnati but was also known as a "chemist, lecturer, artist, biographer and philosopher". Anonymous. "Martin H. Fischer, 1879-1962", *Bulletin of the American Group*. International Institute for the conservation of Historic and Artistic Works, volume 3, No. 1, October 1962, pp. 2-3.

chemistry for artists, called *The Permanent Palette*, which had been published in 1930.⁷ Levison's intention was to make only permanent colors, although in his words "I made a couple of mistakes because I followed Dr. Martin's Fischer's book."⁸ Levison eventually noticed that some of the pigments championed by Fischer were not permanent. However at first Levison's battles about quality in artists' paints were fought with competitors vying for bids on the New Deal Art Projects.

Competition With Other Artists' Paintmakers in the 1930s and the Issue of Quality

As it happened, Levison's timing was excellent for beginning a new painting materials company, coinciding with the inauguration of the New Deal art projects. Levison's determination to produce high-quality artists' paints immediately brought him to the attention of larger manufacturers of artists' colours. Levison had used European artists' oils as his model, conducting chemical analyses on products made by various companies and trying to make a superior product.⁹ European-made products were only occasionally permitted in the government-funded programs. This gave Levison's new company a better chance at winning contracts, but put the few American manufacturers in direct competition with each other in bidding on various projects.

7. Several of Fischer's books on artists' pigments were published by the National Committee on Technic [sic] of the American Artists Professional League, Inc.. Fischer, Martin. *The Permanent Palette*. New York: American Artists Professional League, 1930; and Fischer, Martin (editor Margery Ryerson). *Hints to Artist-Painters (Pigments). A Collection of Excerpts from the Writings and Lectures on Permanent Painting Given by Martin Fischer under the Auspices of the American Artists Professional League and the Fine Arts College of New York University at New York in 1931*. New York: American Artists Professional League, 1940.

8. "I made a couple of mistakes because I followed Dr. Martin's Fischer's book. . . And he listed zinc chromate for instance, zinc yellow, as one of the permanent colors. . . it turned green, although it was perfectly light-fast as a diluted tint with white. So I eliminated strontium and zinc yellow eventually from the list." Levison and Marshall 1986, p. 3.

9. He recalled modeling his first line of oil paints after a Dutch brand which was available in the U.S. during the 1930s but couldn't recall the company name during an interview. This may have been Talens' Rembrandt. Levison and Marshall 1986, p. 3.

During the 1930s there were local and regional conventions attended by manufacturers of artists' materials which provided an opportunity for manufacturers to meet and discuss issues related to quality and business practices. Some manufacturers also made contact at the meetings of the Federation of Paint and Varnish Production Clubs. Levison recalled meeting Walter Grumbacher, scion of the medium-sized art materials company by the same name at one convention in about 1936 and "he advised me not to make the colors too cheap" (referring to the price not the quality).¹⁰ Indeed, recollections by manufacturers of early efforts to discuss issues of quality seem to revolve around business issues related to price-setting and discounting practices rather than the actual composition of the paints.¹¹ The actual link between quality and price was to a great extent a private discretionary matter within each company. Asked whether paintmakers were interested in permanence qualities at this time Levison replied:

"No. They were selling a 6¢ a pound pigment for \$1.60 a tube. . . They were only interested in making money. . . some of them made good colours."¹²

Similarly, Levison found that art supply dealers and the government were interested primarily in the "bottom line" economically.

Within a few years, Levison had begun what would be a life-long crusade for standards to ensure permanence in artists' paints in conjunction with his efforts to enforce fair play amongst paintmakers on bidding to supply paints for New Deal art projects. Levison suggested in a letter to the National Director of the Federal Art Project in 1937 that changes should be made in the way that government bidding was done.¹³ At that time there was great confusion about government requirements for

¹⁰. Levison and Marshall 1986.

¹¹. In discussions of their involvement with various manufacturers' groups Bocour and Golden also mention the centrality of discussions about prices and discounting practices in their exchanges with other manufacturers.

¹². Levison and Marshall, 1986, p. 6.

¹³. As the earlier section makes clear, these concerns were a factor in the decision to fund Rutherford

artists' paints and art supplies were often ordered using the same specifications which had been developed for commercial and industrial paints. Therefore, one level of problem concerned the fact that government purchasing agents had little knowledge of what to look for in artists' paints. On another level, Levison implied that some art materials manufacturers were careless and perhaps not totally honest. In a carefully-worded request Levison suggested that the government procedure of buying on specifications include mandatory testing to be fair to all manufacturers. He softened the criticism by stating that paintmakers had been following general paintmaking standards rather than respecting the special need of artists for permanent materials. He suggested as part of the new procedures that the government require manufacturers to adopt the use of standardized chemical names to identify the pigments used in their colours (not trade names). Joy Turner Luke, an artist and later participant in the fight for truth in labelling described the situation as follows:

"In the 1930s there was chaos in the labeling for artists' paints. Paint containing the same pigment was sold under different names and under the names of obsolete pigments. Even the best lines of artists' paint contained pigments known to fade badly. There was no way for artists to know what they were buying."¹⁴

As noted in the discussion of the New Deal, Levison's strong support for the establishment of scientific testing and standards was used to justify funding the work of Rutherford J. Gettens and Frank Sterner of the Boston Paint Testing and Research Laboratory in the Federal Art Project for Massachusetts during the Work Progress Administration. It was through these contacts that Levison became a member of the Standing Committee working on the development of the first Recommended Standard

J. Gettens and Frank Sterner's work at the Boston Paint Testing and Research Laboratory of the Massachusetts Art Project. Correspondence between Levison and the National Office was quoted in an untitled document proposing the laboratory attached to Letter from Richard C. Morrison (Assistant to the National Director of the Federal Art Project) to John H. McDonough, Federal Art Project for Massachusetts, April 7, 1937. WPA. AAA DC79:1710.

¹⁴ Luke, Joy Turner. "Heroes: Henry W. Levison", *Pen, Pencil & Paint*, National Artists' Equity Research Committee, Fall 1993, p. 3-4 and 6.

for Artists' Oils in 1942 and subsequent revisions. This committee and later related efforts with other organizations interested in testing and standards will be discussed in more detail below, following a brief synopsis of Levison's work as a paintmaker.

Levison The Paintmaker: Early Innovations and the First Line of Artists' Acrylics

Permanent Pigments, Levison's artists' paints company, shared the building space and some of the staff with his father's lacquer company which he continued to work for as well. Levison's business grew in the 1930s and his brother David helped with business matters related to artists' paints. During this period Levison started putting the guaranteed composition of each colour on the tube. Others were inspired by the practice, notably the M. Grumbacher Company which used this idea to bring out a line of "pre-tested" paints. As well, even before the war, Levison was also experimenting with new products related to painting media (not only to pigments), such as high quality artists' oil paints made from sun-thickened oil, a laborious product to make which was too expensive for artists at the time. Balancing quality with price was always a concern.

After the war, there was an increased demand for both student-grade and artists' quality supplies. Levison developed a painting material called Tri-Tec based on an emulsion and a film former giving a choice of a "triple technique" of oil colour, tempera or water colour work which became popular in schools and with hobbyists.¹⁵

Aware of developments in the general paintmaking industry, Levison kept looking for new ways to improve paint formulas and cut costs, experimenting with samples of products sent by chemical companies. Levison appears to have followed the research being done in Mexico by Gutiérrez or muralists during the late 1940s and 1950s, stating:

¹⁵. Telephone Interview with Tom Vonderbrink, Development and Services Laboratory, Binney and Smith, Winfield, Kansas. April 21, 1994.

"Permanent Pigments continued on with oil colors and watercolors until after the war when Rohm and Haas became large and the Mexican artists were messing with . . . various types of emulsions. . . They were painting murals in swimming pools or water systems and so forth. . . ."16

In the early 1950s Levison was buying resins from Rohm and Haas for the lacquer company. As part of its customer relations policy the chemical company sent him various samples of materials but he had not been satisfied with any of them, in particular the vinyl emulsions favoured by Gutiérrez. But eventually he became interested in a new acrylic emulsion. As he put it:

"the vinyl emulsions lasted maybe nine months or so and then they solidified. And that was the trouble with the Mexican stuff. . . They would just solidify in the jar. . .

Whereas I had a cracked jar of acrylic emulsion that didn't solidify even though the lid was cracked. It was there for close to a year so I decided that this was stable enough to makes artists' colors out of. So I formulated a complete line. . . In the early fifties. I experimented with it considerably and made jar colors at first and later on got into the oil tube colors as a result of thickeners and so forth. . . . I formulated the first complete line, gesso, mediums the whole works in emulsion colors, acrylic emulsion colors, which was the Liquitex line."17

Liquitex, the new water-borne acrylic paints were based on a synthetic polymer emulsion made by the Rohm and Haas Chemical Company.¹⁸ It is likely that Levison received technical information about formulas for making water-borne acrylic house paints from the Rohm and Haas company too since at this time the chemical company routinely sent clients a magazine which in 1953 featured three articles on the use of the new chemical product for coating.¹⁹ This magazine was where paintmaker Gutiérrez

16. Levison and Marshall 1986, p. 2.

17. Levison and Marshall 1986, p. 2.

18. Technically the paints are a suspension based on an acrylic emulsion. They were first based on Rhoplex AC-33, an acrylic emulsion which Rohm and Haas began to produce in 1952. Hochheiser, Sheldon, "Rohm and Haas Company Trademarks", *Rohm and Haas. History of a Chemical Company*. Philadelphia: University of Pennsylvania Press, 1986, p. 219.

19. Three related articles appeared in 1953: Anonymous. "New vehicle for water paints. Rhoplex AC-33 is fast drying, has little odor, scrubs well", *Resin Review*, March 1953, pp. 3-6; Anonymous. "Deep tone wall paints. Rhoplex AC-33 and Tamol 731 team up to five deep tone formulations for new paint vehicle", *Resin Review*, June 1953, pp. 3-5; Anonymous. "Rhoplex AC-33 in Primer-Sealers", *Resin Review*, September 1953, pp. 9-10. Courtesy Henry J. Gambino, Advertising Services Manager.

first heard of the new media.

Levison quickly went to work developing formulas for the new acrylic paints, and the first shipments of his new line were ready in late 1954 or early 1955.²⁰ Levison later reminisced about some early problems with the first formulations, for example having his first shipment freeze due to failing to add the proper freeze-thaw stabilizers.²¹ By 1957 the relatively inexpensive, odorless, fast-drying and easy-to-clean paints were featured in an article about their production and use in mural painting published in another magazine sent to clients of the Rohm and Haas chemical company.²² The article stressed the special properties of the Rhoplex resin used to make the paints for artists : color stability, a non-yellowing-film, chemical resistance (to free alkali in plaster of masonry for example), excellent adhesion to various surfaces (like concrete blocks in new constructions), speed of drying, modification of effects using using special mediums and so forth. Levison kept working with new products made by the Rohm and Haas company, modifying the Liquitex formula and adding products made with other members of the same "family" of acrylics in the manufacture of gels, modeling paste and gesso.²³ Part of the impetus for change came directly from the chemical supplier which from time to time made changes to available products and added new chemicals.²⁴

Rohm and Haas Company, Philadelphia, Pennsylvania.

²⁰ A recent pamphlet on company history gives 1955 as a date for the development of the Liquitex line but this may refer to the date after resolution of early technical problems with the formulation. "Fact Sheet. The History of the Liquitex Product Line". Trade Literature Courtesy Binney and Smith Inc., Easton, Pennsylvania.

²¹ According to conservator Robert Lodge, artist Paul Arnold of Oberlin Ohio ordered the first batch of Liquitex from Levison and it was ruined by freezing during shipment. Conversation with Robert Lodge by Jan Marontate, October 1993.

²² A mural project by painter Garo Z. Antreasian at Indiana University was shown as an example of applications in the article. Anonymous. "A Modern Medium for Fine Arts. Cincinnati Producer of Artists' Supplies Uses Rhoplex Acrylic Emulsion in the Manufacture of New Line of Artists' Colors". *The Rohm and Haas Reporter*, volume XV, Number 5, September 1957, pp. 12-16.

²³ In particular, they were based on products in the Rhoplex "family", a registered trademark of a group of acrylic resin products made by the Rohm and Haas company.

²⁴ For example, the history of Soluvar, a turpentine soluble methyl methacrylate varnish made by Permanent Pigments which was based on chemicals produced by Rohm and Haas. In a response to an artist's query the chief chemist at Binney and Smith (then the parent company of Permanent Pigments)

Liquitex was the first widely-distributed acrylic for artists and the brand name was so well known in some circles that artists often used it instead of the generic term "acrylic paint".²⁵ As we have already mentioned, water-borne acrylic paints attained a following of devoted professional artists relatively quickly, although the phenomenal expansion of the market for acrylic paints did not occur until the mid-1960s.²⁶ As far as the student and craft market was concerned, though, expansion was slower. On the one hand, the paints dried very quickly and were easy to clean up, making them attractive for student use but, on the other hand, some painters had difficulty handling the new media until retarders, different types of painting medium and gels were made available. The early water-borne Liquitex paints were sold in pots until 1963 when the company developed a technique for making thicker acrylic paints with a consistency similar to oil paints.²⁷ These heavier tube colours contained a gel which made them easier for artists to handle and demand for the new paints grew.

In 1964, shortly after the company developed new formulas for acrylics in tubes,

wrote: "The history of Soluvar is as follows. Originally it was acryloid F-10, then it was felt a better product was possible with B-67 and B-67 replaced F-10. Rohm and Haas (manufacturers of the acryloids) later changed manufacturing procedures for the B-67. This resulted in a different molecular weight distribution and had some side effects on B-67's properties. In order to maintain the quality of Soluvar, it was reformulated using a blend of B-67 and F-10. This combination yielded a superior, easily removable varnish that collected much less dust than previous varnishes, and was tack free." Letter from Richard J. Kaiser, Chief Chemist, Binney and Smith, Kansas to A. W. Rajar, Kansas, October 16, 1981. Zora Pinney Papers, National Gallery of Art, Washington, D.C.

²⁵ This may have in part been to avoid confusion with the turpentine-compatible acrylic resin paint Magna made by Bocour and Golden. Originally "Liquitex" referred only to the line of water-borne acrylics made by Levison. However, the Liquitex name was so well-known that the parent company (Binney and Smith) which purchased Permanent Pigments eventually decided use the name for all of the fine art and graphic supplies products. Beginning in 1979 all of the fine arts products made by Binney and Smith were repackaged under the Liquitex brand name. Anonymous. "Leaders in Visual Expression", *Rohm and Haas Reporter*, Volume L, Number 4, Winter 1992, pp. 13-17.

²⁶ As we shall see in the in-depth interviews of early artists who used acrylics, many of the first users of Liquitex were younger painters developing new approaches. However, one very prominent early user was regionalist Thomas Hart Benton who completed the mural *Independence and the Opening of the West* for the Harry S. Truman Memorial Library in Independence, Missouri in 1961 at the age of 72. Levison was invited to the opening. Mrs. H. Levison and Marontate, 1994.

²⁷ *The Story of Paint*. Easton, Pennsylvania: Binney and Smith, n.d., n.p. Courtesy Binney and Smith, 1994.

Levison and his brother sold the company to Binney and Smith, a craft-supply company which made Crayola crayons.²⁸ When Levison sold the company it was a still relatively small, family-run with six managers (counting Levison and his brother) and about 75 plant workers, plus a few people in sales and advertising (including three artists).²⁹ It was however one of the major art-material manufacturing companies in the U.S., having carved out an important niche for itself in the fine art trade. Indeed it was Permanent Pigment's reputation with artists which led to the sale, since a famous artist apparently recommended purchasing Levison's company.³⁰

Levison remained with the company after he sold it, developing more new products and ideas, such as a system for colour mixing called "Modular Color" which was introduced in 1971, the year Levison finally retired from paintmaking.³¹ After this time he became very active in materials testing establishing a non-profit research foundation, Colorlab.

Artists in the Paintmaking Company as Consultants and Educators

Unlike the other pioneers in synthetic paintmaking for artists, Levison was not an artist, either by training or by inclination. Instead he relied on advice from artists about

²⁸. Binney and Smith had begun by manufacturing crayons and was well-known for its Crayon brand of pigmented crayons used in schools. In 1984, both companies were purchased by Hallmark Cards, Inc. a large greeting card manufacturer with many subsidiaries.

²⁹. In 1964 the management team consisted of a president (Henry Levison), a vice-president (David Levison), a salesmanager, an accountant, a plant manager and a person in charge of quality insurance. Tom Vonderbrink, a graduate in chemistry from the University of Louisville, joined the company a few months after it was purchased and worked closely with Levison until he retired. Tom recalled with amusement that the manufacture of artists' paints held a surprising combination of high-tech and very menial jobs. He remembered that his first job in the company was a very dirty low-tech task of "running" the copal which involved heating the tropical resin to about 338-349 degrees to cook off impurities. Vonderbrink and Marontate April 1994; and Levison 1975, p. 11.

³⁰. The artist was apparently a well-known painter but Levison could not remember the name of the artist at the time he was telling this story. Levison and Marshall 1986.

³¹. The plant manufacturing the fine art products of Permanent Pigments, Inc. was opened in Winfield, Kansas in 1966, although the Cincinnati office was not closed until 1979 when the balance of the Liquitex operations were moved.

what characteristics they wanted in their paints. Sometimes he did this informally, for example by giving samples of products he was testing to dealers or artists to try, and then asking for their opinions.³²

On other occasions, artists were paid for their services, working as part-time consultants or full-time employees. For example, he produced formulas developed by artist Frederic Taubes who was a well-known advice columnist and an author of many artists' handbooks. Permanent Pigments manufactured "Taubes' Copal Painting Medium" and "Taubes' Copal Varnish" based on formulas using a hard natural resin for use with oil paints which Taubes maintained were re-creations of the materials of the "Early Masters".³³ Taubes also authored several short pamphlets on painting techniques distributed by Permanent Pigments through dealers.³⁴

Another noteworthy collaboration occurred between Levison and Boston-area artist Nathaniel Jacobson who had developed an application of color theory based on the Munsell system.³⁵ This system, which the company called Modular Color allowed artists to use an ingenious diagram called a "color map" to figure out how to mix a given colour using Permanent Pigment paints.³⁶ By 1971, each tube of Liquitex paints began carrying

³². An employee who joined the company in the mid-1960s recalled visiting all of Levison's clients and finding that many of the dealers and artists were asking for products that she had not even heard of yet which they had had been trying out before the company brought them into production. Conversation with Barbara Benton, Binney and Smith, May 1994.

³³. Taubes maintained that "Congo Copal", a hard resin found in nature in what was once the Belgian Congo was probably used by Flemish painters based on evidence from manuscripts and the examination of pictures. His claim was corroborated by research in conservation in the 1950s. This claim will be discussed in the context of Taubes' work below. Hine, Diane Casella. "Frederic Taubes. A Retrospective", *American Artist*, Volume 38, Issue 384, July 1974, pp. 30-35, 65-66, especially p. 65.

³⁴. For example: Taubes, Frederic. *Taubes on Painting Media (their effect on the nature of paints and the permanence of paintings) and Varnishes & Varnishing. An instructive treatise.* Cincinnati: Permanent Pigments, 1951.

³⁵. Conversation with Mrs. Henry Levison, May 1994.

³⁶. The company produced a great deal of literature on using the system and a video on this topic featuring artist. Much of the material was for sale rather than free. Russell Woody: *An Introduction to Color Mixing with Russell Woody*, The Art Video Series, Volume I, Easton, PA.: Binney and Smith, 1987. See also Art Materials Division, Binney and Smith *How to Mix and Use Color with the Liquitex Acrylic and Oil Colour Map™ and Mixing Guide*. Easton, Pa.: Binney and Smith, 1980, revised 1982. Binney and Smith Folder, Zora Pinney Papers, Conservation Department, National Gallery of

identification of its position on the color map (its Modular Color number). In addition the tubes carried the identification of the pigments in each paint mixture, and its Munsell notation (numbers used for assessing tinting strength standards). The Munsell system was favoured by the Inter-Society Color Council and used in paintmaking standards for industry which Levison had worked to establish.³⁷

Levison also hired some artists as full-time employees to work in sales, advertising, to evaluate products, to produce instruction manuals and to lecture to artists' groups.³⁸ Artist and author Russell Woody claims to have been the first artist to be hired to work full-time for Levison in the capacity of an artist. Woody worked closely with Levison and remained with Permanent Pigments from 1963 until about 1990.³⁹

Woody had first come in contact Levison in around 1959 by writing the paintmaker to request information about acrylics for a Master's thesis on the new media. At that time Woody was an art student at Mexico City College suffering from bad health due to reactions to solvent-based paints. He was seeking safer alternatives by investigating the new water-borne acrylics and other synthetic painting media.⁴⁰ In

Washington, D.C..

³⁷. This system of color notation is based on the idea that color variations take the shape of an elliptical solid (sort of like a squashed ball) representing hue, value and chroma. The solid is carved into 267 blocks, and each block represents a color name. Various relationships can be studied by looking at the blocks from different angles. The Munsell system forms an atlas of charts (that is a flat diagram of the 3-dimensional model). It shows intervals between different blocks. Each position can be labelled and this makes it possible to describe a color in a way which can be communicated and, under set conditions, reproduced. The method was recommended by the Inter-Society Color Council and was adapted by the National Bureau of Standards for use in the second Recommended Commercial Standard for Artists' Oil Paints (CS98-62). For a concise explanation see Morris, William (editor). "Color--Explanation of the Color Definitions", *The American Heritage Dictionary of the English Language*, New York: Houghton Mifflin Co, 1973 and *The ISCC-NBS Method of Designating Colors and a Dictionary of Color Names*, Washington: National Bureau of Standards Circular 553. See also *Artists' Oil Paints. A recorded voluntary standard of the trade published by the U.S. Department of Commerce*. Washington: U.S. Government Printing Office, 1962, p.13.

³⁸. In 1964 the artists employed were Bill Ryan in sales, Nelson Rohsheim in advertising and Russell Woody as a consultant and lecturer. Vonderbrink and Marontate 1984.

³⁹. Interviews with Russell Woody by Jan Marontate, April 7 and 14 1994.

⁴⁰. Woody's background is presented earlier in connection with the activities of José Gutiérrez' research on plastic paints at the Polytechnic Institute in Mexico City.

1958-1960 Woody sent many letters to paintmakers recalling that:

"I corresponded with all of these people, with Henry Levison and with Leonard Bocour and with Rohm and Haas people and so on . . . And Henry Levison would always respond. Bocour sometimes would and sometimes not. But Levison would write me six or seven single-spaced pages to a question. I mean he would respond with voluminous letters. You couldn't believe what he would give you. He was just very happy that somebody was interested because most artists weren't [interested] in the technical end of it."⁴¹

After graduating Woody returned to the U.S. where he taught high school and began to lecture locally to artists on water-borne acrylics which he believed were excellent, relatively non-toxic alternatives to traditional media. After the lectures people would come up to him and ask where they could buy the new paint and would go to buy it.

Woody was still in contact with Levison and decided to write him saying:

"Look, I'm selling a whole lot of this paint here just by lecturing. How about us getting together and making use of this kind of thing?'. And . . . he had no artist on the staff and he just used local artists in Cincinnati. . . And he said 'because we don't know what artists really want we've been thinking about hiring an artist'. And he sent me a tickets to fly out and talk to him and so I flew out to Cincinnati and I was hired as a consultant to go around and talk to people about acrylics."⁴²

Woody began in the summer of 1963 giving lectures in Cape Cod, a popular artists' summer colony where Leonard Bocour often stayed as well. Various artists taught courses in Provincetown and Woody lectured at the Provincetown Artists' Association where he also met vacationing artists who were teaching at art schools elsewhere. Through these contacts Woody obtained invitations to conduct demonstrations and lectures all across the country at universities, colleges and art associations.⁴³ As he described it:

"in those days nobody knew anything about acrylics. They had no idea what they were. And so I'd go in and I'd do an hour or so of explanation of what acrylics were . . . All the different techniques from watercolor wash, wet-in-wet

⁴¹. Woody and Marontate 1994.

⁴². Woody and Marontate 1994.

⁴³. Woody continues to lecture on painting materials and techniques throughout the United States. After leaving Binney and Smith he was employed briefly by Colart (a large multinational company). At the time of the interview in 1994 he was working as a consultant and lecturer for Grumbacher.

up to sculptural mass. . . . What I did is I used the Liquitex acrylics but that was it. . . . I didn't do any selling at all. . . . It was educational function and that's what I've always done. I've never sold paint by any means. I've always gone in as an educational function."

At the same time, other paintmakers were already reaching out into art schools. Len Bocour had been lecturing to students for years, although he did not talk exclusively about modern materials. Soon others, like artist-paintmaker Ron Hayes, who developed the New Masters line of synthetic paints would begin. Woody maintained that his style was markedly different from Bocour's"

"Bocour . . . wanted sell his paint. And Bocour's presentation was a lot different from mine because he was dealing with his personality and artists' connections and things of that nature and mine was strictly technical."⁴⁴

During this time Woody continued to consider himself an artist above all, and continued to paint but he explained:

"I don't sell much. But that's why I do the other stuff. It's hard to make a living. My work is huge double-sided pieces that hang from the ceiling or are bolted to the floor and they don't move that well."⁴⁵

In addition to speaking to groups, Woody also tried to spread knowledge about the new media through publications for artists and students. In addition to pamphlets and trade literature put out by the company, he authored artists' handbooks on synthetic media. This began almost accidentally due to an unexpected opportunity which illustrates the cross-disciplinary communications which occurred amongst individuals interested in art materials. Around 1963, just after Woody had begun to lecture for Permanent Pigments, Levison had been asked by a publisher to be technical reader for a book on synthetic paints for artists by Lawrence Jensen, an art professor.⁴⁶ Jensen decided to change publishers at the last minute and Levison knew this left a hole in the

⁴⁴ Woody and Marontate 1994.

⁴⁵ His work was featured in an article in *American Artist* in February 1982.

⁴⁶ Jensen was a painter who taught at the Castleton State College Art Department in Vermont. His book is very heavily based on the 1954 publication of a 1949 manuscript by Gutiérrez which had been cheaply reproduced in Canada and was not widely available. Jensen, Lawrence N. *Synthetic Painting Media*, Englewood Cliffs: Prentice-Hall, Inc. 1964; and Gutiérrez, José L. *From Fresco to Plastics: New Materials for Easel and Mural Paintings*, National Gallery of Canada, Ottawa, 1956.

publisher's schedule. He told Woody to send in a manuscript based on his thesis. They added a technical appendix by Levison and it was published in 1966 as an artist's handbook on the new media called *Painting with Synthetic Media*.⁴⁷

This book contained a brief history of paint media and a discussion of different kinds of synthetic media⁴⁸ but the bulk of the text was devoted to ways of using water-borne acrylics to achieve various effects with many illustrations of works by different artists. Woody also included a survey of brands of synthetic paints made for artists in 1966 when the book finally appeared. Although intended for use by artists and students at the time, this survey of the field constitutes the most comprehensive historical account of early producers of synthetic media located to date including information on the pioneers in synthetic paintmaking for artists and the generation of synthetic paintmakers for artists which followed them, as we will see in connection with the histories of other paintmakers. Levison's technical appendix treated two of his favourite topics: pigments and testing procedures. He wrote a clear, informative chapter on new pigments explaining the general categories, how they looked, how they felt and why they were important for art. On the topic of why new materials were important he made some points which were relevant to media as well as pigments. In the first place he stressed that many of the colors used were simply used out of habit, not because they were the best available. Second, he argued that new materials could broaden the range of possible effects and third he pointed out that shortages in raw materials used for traditional artists' colours were making the raw materials increasingly scarce and expensive, therefore new alternatives needed to be found. Levison finished his appendix with a brief exposition of testing procedures, complete with close-up slides

⁴⁷ Woody Jr., Russell O. (with a technical appendix by Henry W. Levison). *Painting with Synthetic Media*, New York : Van Nostrand Reinhold Co., 1965

⁴⁸ These included the water-borne acrylics for artists called here "polymer emulsions", paints based on acrylic resin (like Magna), various other preparations made with polyvinyl acetate, vinyl resin, and ethyl silicate, pyroxylin lacquers and so forth.

of accelerated ageing tests, thereby initiating the reader to some basic concepts related to paintmaking and to conservation concerns.

.. Later Woody wrote a second book devoted exclusively to ways of using water-borne acrylics. This book, *Polymer Painting and Related Techniques* was presented as a course outline geared to art educators.⁴⁹ The books were published independently of the company but certainly enhanced the authority of Woody and Levison, and enhanced as well the general reputation and credibility of the educational thrust of the company's work with art teachers in particular.⁵⁰

Other more technical publications were also produced by the company. For example, even after his retirement Levison apparently continued to collaborate on a series of technical treatises on permanence in painting which was published by the company.⁵¹ For many years Levison produced a monograph called *Enduring Colors for the Artist* in which he endeavored to explain basic principles about permanence, scientific testing and to describe the basic chemical composition of various components of paint manufactured by Permanent Pigments, discussing their reliability for use in art and how they were tested. Over the years the length and content of the booklet changed dramatically.⁵² It is a fascinating socio-historical document juxtaposing tables

⁴⁹. In it Woody acknowledges his intellectual debts to his teachers in Mexico: José Gutiérrez and Toby Joy Smith, as well as to Henry Levison and a prominent figure in the field of art education, George Chavatel who was himself an author of a "hot-to" book for art educators on acrylics. Woody Jr., Russell O. *Polymer Painting and Related Techniques, with course outline and works of prominent artists*. New York: Van Nostrand Reinhold Co., 1974; and Chavatel, George. *Exploring with Polymer. A Guide to New Media for Young Adults*. New York: Reinhold Publishing Corp. 1966.

⁵⁰. More recently the company made videos of Woody's demonstrations of ways of working with the new media as well. For example: *A Survey of Acrylic Techniques with Russell Woody*. Art Video Series Volume II, Easton, Pa.: Binney and Smith, 1988.

⁵¹. Anonymous. *Enduring Colors for the Artist, A treatise on permanence in painting*. Cincinnati, Ohio: Permanent Pigments, 1975. Trade Catalogue Collection. National Museum of American History, Smithsonian Institution, Washington, D.C.

⁵². In 1952, the earliest version located to date is a small format, short (36-page) pamphlet. It includes an introduction to the use of the scientific method for studying permanency and the application of science to color manufacture. The paints made by the company (oil, water colors and casein) at that time are discussed. Dr. Fischer's choice of pigments for a "permanent palette" is presented and technical practices to be avoided are mentioned. By 1975 the 48-page book included much technical

of results from scientific tests and hard-nosed chemical terminology with critical prose written for the non-scientific reader and potential customer -- the artist.

.. Thus artists participated in Permanent Pigments' paintmaking and publicity operations in various capacities, but most importantly as a link between the paintmaker and users, providing advice on trends in art and diffusing information about new media and ways to use them in art classes throughout the country.

Levison as Industry Watchdog: Private Research on Testing and Advocacy for Truth in Labelling

The big thrust of Levison's final years was a continuation of his longstanding crusade for truth in labelling, an interest dating from his early involvement in work on establishing standards for painting materials. It was through this advocacy that Levison exercised considerable authority in efforts to study and regulate artists' paints.

Although Levison appeared to have had little social contact with artists during his adult married life, he came into contact with representatives of art associations increasingly in his later years as an authority on technical issues related to artistic concerns. In the words of Woody:

"He was the man who really made the fine art industry honest."⁵³

Levison had conducted research in applied chemistry throughout his career as a paintmaker but documentation about this work is sparse.⁵⁴ One noteworthy project was an eight-year-long investigation of the use of a particular chemical to keep oil colors

information as well such as photographs color testing equipment, tables and charts presenting test results and even a few references to scholarly publications. Binney and Smith Folder, Zora Pinney Papers, National Gallery of Art, Washington D.C. and Bocour Papers, courtesy Mrs. Ruth Bocour, New York City.

⁵³. Woody and Marontate 1994.

⁵⁴. Most of the company records were probably transferred with the subsequent sales but only recent trade literature was available from the large corporation which now owns the company. Historic records could not be located. Inquiries with family and former colleagues about possible locations were fruitless. It is likely that some of the materials about more recent research were discarded or dispersed, given by Levison to collaborators working on related problems when he was no longer able to read.

from separating in the tube.⁵⁵ Levison communicated results in scientific papers presented at meetings of learned societies and sometimes in published papers.⁵⁶

.. After retiring, Levison set up a laboratory which he called Colorlab to conduct tests on pigments and media near his retirement home in Florida. In 1976 he published a book on his research on lightfastness tests and ratings of artists' pigments.⁵⁷ The findings reported in the book focussed on pigments, but in fact, Levison was conducting comparative tests of oils and acrylics at the same time. At this time Levison was embroiled in an on-going dispute with Ralph Mayer, a prominent expert on art materials. The two men had been disagreeing for decades about the merits of synthetic media and Levison was determined to illustrate the strengths of the new materials through systematic testing.⁵⁸ Levison also became a 'watchdog' for the artists' paintmaking industry, purchasing pigments which were advertised as being lightfast, formulating them into paints and conducting lightfastness tests on them.

Levison's testing techniques themselves were significant contributions to the field of materials testing procedures.⁵⁹ He worked on developing new methods of testing materials used in paint which were used on later standards. By 1979 Levison

⁵⁵. Aluminium stearate was routinely used by paintmakers to hold pigment in suspension in tubes of artists' oil colours. Otherwise the colours tend to produce stringy or sticky grinds in oils. Levison noticed that there was a dearth of published information on this practice and conducted a study on its effects. Studying the effect of small amounts in paint mixtures (2%) he found that aluminium stearate had a beneficial effect of retarding brittleness without interfering with drying or film hardness, and that it performed a useful function for brushing quality and stability without affecting color strength.

⁵⁶. The results of the research on aluminium stearate were published in a paper of the *Official Digest*, Federation of Paint and Varnish Production Clubs, November 1948, p. 826 cited in Anonymous. *Enduring Colors for the Artist, A treatise on permanence in painting*. Cincinnati, Ohio: Permanent Pigments, 1975. Trade Catalogue Collection. National Museum of American History, Smithsonian Institution, Washington, D.C..

⁵⁷. Levison, Henry W. *Artists' Pigments. Lightfastness Tests and Ratings*. Hallandale, Fla.: Colorlab, 1975.

⁵⁸. Interview with Joy Turner Luke, May 1995. Tape 1.

⁵⁹. They involved an ingenious combination of comparisons between natural light sun exposures and exposure to high-intensity daylight fluorescent illumination. Luke, Joy Turner. "Henry W. Levison: A Personal Tribute", *Leonardo. Journal of the International Society for the Arts, Sciences and Technology*, 22:2, 1989, p. 265-266. Luke 1989, p. 266.

had decided that the paint testing methods he had been using were deficient and began testing all over again, this time with the cooperation of art-material companies. He reckoned that he should have exposed his paint specimens longer and in the new tests he included more pigments and used four different light sources to test each material. He also studied other matters related to the durability artists' paints such as adhesion and the phenomenon of yellowing of various media. He collaborated with employees of his former paint company and with other paintmakers on some of these projects.⁶⁰

Levison's laboratory research was cut short by failing vision. The tests for permanence rely heavily on visual readings. By 1985 Levison was legally blind and ceased his laboratory research activities, sending his lab equipment to former colleagues still working at Permanent Pigments.⁶¹

Until shortly before his death in 1988 Levison remained active in various organizations. In the fields of chemistry and chemical engineering, he was a fellow of the American Institute of Chemists, a longtime member of the American Chemical Society, a member of the Federation of Societies for Coating Technology and of the Engineer's Club of Cincinnati. He was also a member of the Inter-Society Color Council and the American Society for Testing Materials. He was named to the Art Material Hall of Fame of the National Art Materials Trade Association. He was also a frequent participant at meetings of conservators and mentioned working on a paper to be presented at a meeting of the American Institute of Conservation in an interview two years before his death.⁶²

⁶⁰. His findings on some of the tests concerning comparative yellowing of oils, varnishes and resins during dark storage and their subsequent recovery in daylight were published an article in the journal *Color Research and Application*. He also co-authored a paper on with F. Sutil and E.T. Vonderbrink called "Lightfastness of Pigmented Handmade Paper" which appeared in *Color Research and Application*. Tom Vonderbrink did some of the exposure tests for him in Norwood, Ohio and later in Kansas at the Binney and Smith plant there. Grumbacher apparently also collaborated with him on later testing as well. Luke 1989 and Levison and Marshall 1986, p. 4.

⁶¹. Levison and Marshall 1986.

⁶². Levison and Marshall 1986.

Levison's contributions to the development of commercial standards will be considered in more detail in the context of the social and professional organizations set up to deal with issues related to standards in art materials. The development of standards was also dependent on the work of art conservators, who were a key group of participants in the drive for improvement of knowledge about artists' materials, occasionally working in collaboration with Levison on issues of mutual concern.

Trends in Conservation and Research on Synthetic Media

Conservators were interested in modern painting materials for use in conservation of historic and artistic works. However until relatively recently only a few had much interest in materials for living artists, since working on rare pieces of historic art was more prestigious than the conservation of artwork made by contemporaries.⁶³ Nonetheless, studies conducted by conservators on materials, testing procedures and techniques often fulfilled several functions simultaneously. Conservators were also well-suited to providing links between manufacturers, artists and curators. Many conservators had considerable artistic training and thus a good knowledge of contemporary artistic practices which facilitated communications with artists, who sometimes sought their advice on technical matters. In addition, by mid-century discourse in art conservation increasingly emphasized its affinities with science. As regards technical matters, unlike chemists working in collaboration with manufacturers conservators did not usually have a vested interest in defending particular products, although a few instances of collaboration between conservators and manufacturers in the development of new products have occurred. This combination of scientific and

⁶³. This situation persisted well into the 1970s according to Joy Turner Luke, an active researcher on permanence in art materials, the representative of National Artists' Equity on the Inter-Society Color Council and the first chairperson of the Sub-Committee on Artists' Paints and Related Materials of the American Society for Testing and Materials. Interview with Joy Turner Luke by Jan Marontate, April 1996.

artistic know-how with neutrality gave conservators considerable authority in debates about standards for art materials as we shall see.

-- The vogue for scientific research as a style in conservation practice combined with efforts to improve conservation materials to stimulate research relevant both to work on standards for contemporary painting materials and to the development of new uses for synthetic media related to the arts. (See Figures 5-7.) In order to understand the complex role art conservators and conservation scientists have played in the field of art, particularly with reference to the diffusion of information about synthetic media, it is helpful to consider the transformation of notions about art conservation and the development of sub-specialities in conservation.

'Art Scientists' and the Coming of Age of Art Conservation in North America

Art conservation underwent a dramatic transformation in the twentieth century. As in the case of art, North America became an important center for conservation for the first time. Beginning in the late 1920s, the emigration of European restorers seeking refuge from persecution swelled the ranks of experienced practitioners in the new world.⁶⁴ Some brought with them knowledge of recent research on art materials on the continent, such as the recently-published handbook on art materials by Max Doerner that painters were using. Concurrently, American trends in scientific research began to penetrate conservation practices. Practices were however in a state of flux in the

⁶⁴ William Suhr who went to Detroit was one of these refugees. Rutherford J. Gettens and George Leslie left many first hand accounts of changes in the practice of conservation c.1920s -1970s. See in particular, Stout, George and Karlstrom, Paul. "Tape Recorded Interview with George L. Stout", Transcripts #1 and #2, March 10, 1978. Archives of American Art, Smithsonian Institution, Washington, D.C. especially transcript #1, pp.9-10; Stout, G. L. "Thirty Years of Conservation in the Arts: A Summary of Remarks to the I.I.C. American Group in New York, June 1963", *Studies in Conservation*, Vol. 9, No. 4, November 1964, pp. 126-129; Stout, George L. "Changes in Attitude Toward Conservation in the Arts", *American Institute of Conservation Preprints*, 29 May- June 1, 1976, pp.20-22; and Gettens, Rutherford J. "A Quarter Century of Technical Research in Art at Harvard", unpublished manuscript, 1952. Technical Research Folder, Gettens Papers, Department of conservation, Freer Gallery of Art, Smithsonian Institution, Washington, D.C.

inter-war years. In 1930 the International Museums Office established by the League of Nations called an international meeting in Rome in response to "perturbations in the Art World due to the reckless treatment of paintings being sold in the United States. European restorers in the United States could not resist pressure from dealers to make pictures easier to sell. . . This had led to quackery and ill-qualified restorers. . . ."65

Art historians had also raised their voices in the call for regulation of restoration practices arousing fears of the destruction of cultural heritage and raising complex issues about the interpretation of works of art in their changing socio-historical context.⁶⁶ About 150 people representing 20 countries attended the conference which marked the beginning of efforts in international collaboration on developing standard practices for the conservation of paintings. From the perspective of American conservators the list of insights provided by the conference was as follows:

"exposed antiquity of methods used in some European museums; revealed differences of methods in different countries; established contacts; accepted the prominent part the laboratory should play in restoration; use of the word "conservation" for the first time."⁶⁷

In this case international interest in coordinating efforts and support for scientific methods was linked to concerns by art historians about safeguarding cultural heritage. But perhaps more significantly from the socio-political point of view, these efforts at regulation and "modernization" of practices were made in response to worries by investors about economic effects on the art market of "restorations" by unregulated

65. Packard 1979, p. 87.

66. Stout mentioned that art historians had expressed concerns about the treatment of paintings in particular at the time of the 1930 meeting. Picture-cleaning controversies have been a particularly thorny issue in relations between art historians and conservators. Fundamental questions are raised about the significance of works of art in their changing socio-historical context, the artist's intent and the history of the reception of the artwork when cleaning and restoration is undertaken. See for example Keck, Sheldon. "Some Picture-Cleaning Controversies: Past and Present", *Journal of the American Institute of Conservation*, Volume 23, Number 2, Spring 1984; and Keyser, Barbara. "Saving the Significance", *Museum Management and Curatorship*, Volume 13, 1994, pp. 130-159.

67. Packard 1979, p. 87 and Stout 1964. A manual was published subsequently: International Museums Office, *Manual on the Conservation of Paintings*. Paris: International Institute of Intellectual Cooperation, 1940.

practitioners. Thus arguments for the development of more "rigorous" procedures in conservation drew on a broad range of appeals (from the disinterested aesthetics of scholars in art history through the hard-nosed balance-sheets of investment counsellors).

The inception of New Deal art projects in the 1930s made issues related to the care of art a public affair and conservators were consulted in various art projects. Here, as previously discussed, the call for the application of scientific knowledge to the arts fulfilled an additional function : that of conveying the illusion of bureaucratic control over artistic production supported by public funds. The Boston Paint Testing and Research Laboratory provided a high-profile example of the involvement of conservators in research on materials for living artists working on public art projects, not just in restoring historic works. Leading spokesmen for the appropriation of scientific knowledge in conservation, like Rutherford J. Gettens from Harvard, reached beyond the confines of conservation circles, sharing technical knowledge with paintmakers and painters and lecturing to artists' groups, locally and even internationally.⁶⁸ Gettens and other conservators were actively involved in working on the establishment of standards for the manufacture of art materials in collaboration with artists, manufacturers and bureaucrats at the National Bureau of Standards. This civic participation of the conservator-scientist not only brought conservation into the public eye, but it also subtly shifted the range of activities considered part of the conservators' job and brought attention to partisans of scientific methods.

⁶⁸. For example Gettens was invited with two colleagues to a national conference of Canadian artists sponsored by the Carnegie Foundation, the National Gallery of Canada and Queen's University in Kingston Ontario in 1941. The theme of the conference was the role of the artist in society, with special emphasis on the artist's responsibility in wartime. Gettens, George Holt and Frank Sterner gave two half-day lecture demonstrations on materials and techniques. They discussed work towards the first recommended commercial standard for artists' paints then underway. Part of the proceedings were broadcast over national radio. The proceedings were published and a separate bound document with the formulae and techniques presented was printed. Bell, Michael and Frances K. Smith (editors). *The Kingston Conference Proceedings. A Reprint of the Proceedings of the 1941 Kingston Artists' Conference*. Kingston: Agnes Etherington Art Centre, Queen's University, 1991.

Although he later specialized in metallurgical problems related to Asian art, Gettens was particularly polyvalent in his approach during much of his life, presenting his own expertise as that of a scientist rather than specialist on a type of art or period. His efforts to promote scholarly habits and scientific procedures were significant for the emergence of the prestigious "conservation scientist" as distinguished from the hands-on "working" conservator.⁶⁹

The power of scientific culture and belief in its potential for resolving problems in art conservation and authentication brought scientific practices to the backrooms of museums, particularly in North America. Soon methods from laboratory sciences were appropriated by working conservators as standard techniques in routine treatment practices as well. By mid-century great changes were underway in approaches to caring for art according to Gettens:

"Except for refinements of lighting or display, art galleries still look much as they always have. But behind the scenes great changes have been taking place in the last 50 years. The old atmosphere -- part curiosity shop and part ivory tower -- has been swept away, and the working area of almost any large museum today is a complex laboratory manned by a varied group of scientists, researchers and technicians. Since many of the important modern collections were established after 1900, it is not surprising that scientific method should have found its way into the art gallery."⁷⁰

Gettens outlined the fundamental activities of the "art scientist" : investigation of the methods and materials of school and masters, repairing, restoring objects and protecting them, although he admitted that many of the day-to-day activities were not particularly dramatic and that

"Science is applied to art with most spectacular results when it is used to

⁶⁹. The use of the terms "conservator" and "conservation scientist" to distinguish those who work with art from those who tend not to touch art is one which was repeatedly emphasized by hands-on conservators, the "artists" of art conservation in discussions at art conservation meetings, where the two "types" mingle. We will use the term "conservator" as a generic term covering both types of practices for convenience in this text, endeavouring to use modifiers when distinctions between the types are important.

⁷⁰. Gettens, Rutherford J. "Science in the Art Museum", *Scientific American*, vol. 186, No. 1, July 1952 pp. 22-27.

authenticate a disputed masterpiece or to expose an ingenious forgery."⁷¹

As for paintings, both visual examination and chemical analysis had made considerable use of new techniques. By mid-century, visual techniques used x-rays, ultraviolet light and various microscopes, spectrosopes and other optical instruments. (See Figure 7.) Myriad chemical and physical tests carried out on small samples taken from the work of art combined with visual examination permitted evaluation of the painting's "condition", diagnosis of its structural weaknesses and methods. Gettens saw the introduction of scientific techniques as instrumental in the transition of the restorer's trade into the profession of the art conservator:

"In the early 20th century chemists and physicists began to invade the field of art restoration. They developed methods of microscopic analysis of pigments and mediums, and study of layered structures. They learned much from x-ray analysis of paintings. . . . Slowly a whole new corpus of knowledge began to build up. It soon came to be realized that scientists, restorers and curators needed ways to exchange information among themselves.

The chemical literature was full of fresh ideas and descriptions of new products unknown and inaccessible to restorers. In addition, new points of view began to invade the field. . . . [For example] rather than make more attempts to rescue and restore objects that had suffered from vicissitudes of time and unfavorable environment it was believed better to try to correct the environment itself. . . . The term "conservation of cultural heritage" came into use and restorers began to call themselves "conservators". Preventive medicine came to be appreciated as much as therapy."⁷²

The scientific approach brought with it many new ideas, however the artisanal tradition did not vanish and hands-on work was still fundamental. In some instances representations carefully limited the purview of scientific activities to "diagnosis".⁷³ Yet

⁷¹ Gettens, 1952.

⁷² Gettens, Rutherford J. "IIC. An International Association of Conservators", *Museum News*, June 1969, pp. 11-14.

⁷³ This was particularly the case in England, where a strong artisanal tradition of restoration persisted. For example in response to an article about scientific techniques at their gallery, two conservators pointed out that "The pictures are cleaned and restored, not by the the scientific staff as you state, nor even under the supervision of scientists, but by trained restorers using mainly traditional methods and materials. Science enters only in three minor, though not negligible respects. . . the use of special photography such as infra-red and x-rays. . . when overpaints, already shown by visual examination to be earlier restorers' work can be readily proved by chemical analysis to be accretions. . . and in testing and grading of the materials used in the restoration." Copy of letter from N. Brommelle

the enthusiasm for the authority conferred by the aura of scientific expertise was contagious. Indeed, even many hands-on conservators with little scientific training appropriated aspects of the new discourse and participated in the social construction of the field of *scientific* art conservation adopting metaphors from the experimental sciences and the liberal professions to describe their activities.⁷⁴

Although the scientific approach was avowedly modern, conservators constructed a disciplinary history of the use of scientific methods in conservation which served to promote a sense of shared group identity and to reinforce claims for the social recognition of conservators as a professional group -- as twentieth-century descendents of great men of science.⁷⁵ Gettens for example traced the historical roots of his work as an "art scientist" to 18th century foundations in work on Greek and Roman artifacts conducted in England, France and Germany, which he believed formed the foundations of "archaeological chemistry".⁷⁶ Other conservators joined in this construction of a historical tradition. According to standard accounts in conservation publications a new approach to art conservation began to emerge in the 19th century.⁷⁷ By the 1960s

and A. Lucas of the National Gallery to the editors of *Chemistry and Industry*. "Feller-Gettens 1950-1958" Folder. Gettens Archives, Freer. Lucas, A. and Brommelle, N. "Letters to the Editor", *Chemistry and Industry*. December 19, 1953, p. 1363.

⁷⁴ For example, the term "private practice" is used to refer to free-lance conservators who are not employed in government or institutions; paintings, like patients, undergo "treatment" and so forth. Training of hands-on conservators increasingly relied on basic scientific principles as is evident for example in *Science for Conservators* textbooks in the Conservation Science Teaching Series of publications by the Conservation Unit of the Museums and Galleries Commission of Great Britain in conjunction with Routledge beginning in the late 1980s.

⁷⁵ No female heroines in the 19th-century accounts of precedents for the application of scientific methods to conservation have yet been found in the literature.

⁷⁶ A.H. Church's 1890 *Chemistry of Paint and Painting* was cited by Gettens as a groundbreaking work in the application of science to technical problems in the field of art. Also in the late nineteenth-century E. Raehlman in Germany and A.P. Laurie began the scientific studies related to art using microscopic and microchemical methods. Church, A.H. *The Chemistry of Paints and Painting*, Seeley and Co., London, 1890.

⁷⁷ Pasteur, L. "Notes pour des leçons de physique et de chimie appliquées aux beaux-arts", *Oeuvres de Pasteur—Tome VII—Mélanges Scientifiques et Littéraires*, Paris, Masson, pp. 224-262; and [Faraday] "Report from the Select Committee on the National Gallery together with the proceedings of the committee, minutes of evidence, appendix and index", London, House of Commons, 4 August 1853, p. 382, Minute No. 5547. Cited in Stolow, Nathan. "Conservation and Scientific Research at the National

vignettes mentioning the names of eminent nineteenth-century research scientists like Pasteur and Faraday were standard fare in historical accounts justifying the inevitable rise of scientific approaches to art conservation.⁷⁸

The appropriation of scientific metaphors and methods also served to bolster arguments for increased funding and the creation of employment in the area of conservation. Not incidentally, the expansion of discourse about scientific method in conservation occurred roughly simultaneously with the establishment of permanent conservation units in many major museums and art institutions. Until this happened, the treatment of works of art, especially of paintings, even in many of the major museums had often been carried out principally by conservators in private practice rather than staff employees. Many of these "were men of the old carver-gilder, picture-cleaner, craftsman type".⁷⁹ The new trend in art conservation and restoration in the post-war years was to increasing specialization and division of labour with the addition of a new category of participants in conservation : trained scientists often with little background in studio art techniques, aesthetics or art history.

Infrastructure for Scientific Conservation The Establishment of Research Laboratories in Art Institutions

The newer "art scientists" or "conservation scientists" established themselves in prominent positions, constituting to some extent a relatively isolated technocratic elite in the institution. At mid-century hands-on conservators still held an ambiguous position in the hierarchy of museums and art institutions with a status below that of curators and

Gallery of Canada.", Reprint from *Professional Public Service*, February 1963, Vol. 42, No. 2, pp. 4-7. Document "Stolow DOC/CLWT", National Gallery of Canada Archives, Ottawa.

⁷⁸. Even recent papers will frequently include a brief historical review of "key figures" in the pantheon of the history of scientific approaches : Stoner, Joyce Hill. "The Impact of Research on the Lining and Cleaning of Easel Paintings," *Journal of the American Institute of Conservation*, Volume 33, 1994, pp. 131-140.

⁷⁹. Boustead, W. "The Conservation Department of the New South Wales Art Gallery, Australia" *Studies in Conservation*, no. 5, 1960, pp. 121-131.

head administrators.⁸⁰ In contrast conservation scientists often held post-graduate degrees in science (frequently in chemistry) at a time when none were offered in art conservation; and they required expensive scientific instruments which added to their cultural capital.

There were in fact very few functioning centres with modern equipment for the practice of scientific approaches to art conservation until mid-century. Officials of some of the larger European museums were the first to establish museum laboratories, one of the earliest being in Berlin.⁸¹ Between the first and second world wars major museums in Europe began in earnest to set up laboratories.⁸²

In the United States, interest in introducing scientific methods to the examination and treatment of art had already been evident in the 1920s, with the fairly independent work of a small number of conservators scattered about the country.⁸³ Edward Waldo Forbes, legendary patron of conservation, organized the leading center for scientific approaches to the study of art in America in the interwar

⁸⁰ Discourse about possible sources for the disparities cite a variety of factors, among them: past prejudices formed in the era of the restorer-tradesman when working with hands was thought to be lower class, the lack of a clear system of accreditation, and the lack of a Ph.D. until recently. On another level, the status of conservators can be seen as merely a manifestation of pervasive identity problems of museum workers imbedded in the socio-historic context of museums and art institutions themselves. Teather, J. Lynne. "The Museum Keepers. The Museums Association and the Growth of Museum Professionalism", *Museum Management and Curatorship* volume 9, 1990. pp. 25-41.

⁸¹ It was set up at the State Museum in Berlin (in 1888).

⁸² The laboratory of the British Museum for research in conservation was installed in 1919 under Alexander Scott and later Harold J. Plenderleith. In a similar vein, the Museum of Antiquities in Cairo was set up. In 1921 the British Museum in London established a laboratory. In 1925 a laboratory was established at the Louvre. In Europe in the 1930s scientific laboratories were established at the Courtauld Institute, University of London and the National Gallery, London (1934). Also in the 1930s the Central Laboratory of the Belgian Museum (later, l'Institut Royal du Patrimoine Artistique de Belgique) was founded under the director of Paul Coremans. In the early 1940s the *Istituto Centrale del Restauro* was set up in Rome.

⁸³ For example, Alan Burroughs began x-ray work at the Minneapolis Museum prior to going to Cambridge where he joined the technical staff of the Fogg Museum to continue the study of the technique of making x-rays of paintings and to build up a collection of x-ray shadowgraphs from the study and comparison of artists' methods. Gettens, Rutherford J. "A Quarter Century of Technical Research in Art at Harvard", unpublished typescript, dated 1952. Gettens Archives, Department of Conservation, Freer Gallery of Art, Smithsonian Institution, Washington, D.C., p. 3.

years at the Fogg Museum at Harvard University in Massachusetts. Known first as the Department of Technical Research, and later called the Department of Conservation, Gettens and his colleague George Leslie Stout produced major publications which were still being used as standard texts in university curricula in the 1990s.⁸⁴ With funding from the Chemical Foundation Gettens and Stout also produced the short-lived but highly influential scholarly journal, *Technical Studies in the Field of the Fine Arts*.⁸⁵ In the 1930s more technical laboratories were set up in U.S. museums notably at the Museum of Fine Arts in Boston, and the Metropolitan Museum of Art, New York.⁸⁶ The National Gallery of Art in Washington opened in 1941 with a conservation staff which was keenly interested in following new trends in the field.

Wartime disruptions stalled expansion and interrupted research, although according to Stout efforts to save art collections, archives and historic monuments in war zones drew attention to problems of the environment and transport which later became key elements in conservation as the "travelling exhibition" became more common.⁸⁷

After the war more conservation scientists were hired by major institutions to assist in analysis and treatment of artworks.⁸⁸ In North America during the 1950s many

⁸⁴. Gettens, Rutherford J. and George Leslie Stout. *Painting Materials. A Short Encyclopedia*. New York: Dover, 1966 reprint of 1942 publication.

⁸⁵. This is discussed in more detail in the section on the New Deal. See also the notes and correspondence in the papers of George Leslie Stout for example : "Early Years of Conservation at the Fogg Art Museum", George Leslie Stout Papers, Archives of American Art, Smithsonian Institution, Washington, D.C. microfilm reel 1424: 763-773.

⁸⁶. Gettens, Rutherford J. "Teaching and Research in Art Conservation" *Science*, April 21, 1961, pages 1212-1216.

⁸⁷. Stout, George L. "Thirty Years of Conservation in the Arts: A Summary of Remarks to the I.I.C. American Group in New York, June 1963". *Studies in Conservation*, Volume 9, Number 4, November 1964, pp. 126-128. For an evocative description of the conditions for field operations the American military's group of specialists (including Stout) trying to arrange protection for artistic and historic works in war zones, see: Flanner, Janet. "Annals of Crime. The Beautiful Spoils", *The New Yorker*, March 8, 1947, pp. 38-52.

⁸⁸. English and American accounts of conservation history in the two decades after the war tend to lack references to German conservators and laboratories after World War II. This lacuna must be at least partly ascribed to lingering hostilities from the war, since German work in the field continued, for

new centers for scientific research applied to art began to appear.⁸⁹ Budget cuts and administrative changes caused a massive exodus of prominent staff from the Fogg.⁹⁰ The Freer Gallery of Art inaugurated its laboratory for Technical Studies in Oriental Art and Archaeology in 1951, hiring Gettens who abandoned his work on 20th-century materials to devote the bulk of his remaining career primarily to technical problems in Asian art, but who remained active in the conservation community. The Intermuseum Laboratory in Oberlin, Ohio, supported by several museums of the Midwest, began to function under the leadership of Richard D. Buck⁹¹. This trend was apparent elsewhere in North America and many other important conservation centers began to emerge in the decade and a half after the end of the war.⁹²

For example, in 1957, the National Gallery of Canada hired the young scientist Nathan Stolow to head a department of conservation and scientific research focussing on paintings.⁹³ Stolow was sent on a tour of U.S. conservation laboratories before

example in Munich, which had been an important center for research on materials since the end of the 19th century.

⁸⁹. A 1960 study listed 133 institutions in 38 countries with conservation laboratories or restoration workshops. At this time, which was a period of transition in conservation methodology the facilities could not be easily classified according to their use of scientific methods for research, analysis and treatment. *Répertoire des Laboratoires de Musée et Ateliers de Restauration*, Centre International d'Études pour la Conservation et la Restauration des Biens Culturels, UNESCO-ICOM, Rome, 1960. 274pp.

⁹⁰. Among them, Stout who became Director of the Worcester Art Museum in Massachusetts, Gettens, who took up a position at the Freer Gallery in Washington and Horowitz a paper conservator who went to the Morgan Library. A few years later Richard Buck left to head the Intermuseum Conservation Laboratory based in Oberlin, Ohio. Technical researchers at the Fogg had been plagued by chronic shortages in funding from the beginning, often working as part-time instructors and supplementing their income with "outside work". After World War II, the situation worsened notably when Edward Forbes, director of the Fogg and the driving force behind conservation at Harvard retired. Interview with George L. Stout by Paul Karlstrom, Archives of American Art, Smithsonian Institution, see especially, transcript #2 pp. 17-18.

⁹¹. R.D. Buck, "An Experiment in Cooperative Conservation", *Studies in Conservation*, No. 4, 1959, pp. 140-145.

⁹². Including those at the Walters Art Gallery in Baltimore, the Isabella Stewart Gardner Museum in Boston, the Department of Art of Yale University, the Brooklyn Museum, the Philadelphia Museum of Art, the University of Pennsylvania Museum, the Art Institute of Chicago, the Detroit Institute of Arts, and elsewhere in the mid-west (for example in Kansas and Cleveland). See Gettens, 1961.

⁹³. Stolow held a B.A. in Chemistry from McGill University, an M.A. from Toronto and a Ph.D. from the Courtauld Institute in London, England. Pearl McCarthy, "National Gallery Research Unit to

setting up the new facilities at the gallery; his reports to the National Gallery of Canada director provide a lively account of conservation research and facilities in the 1950s.⁹⁴

.. The issue of centralization and regionalization of services arose as smaller centers began to demand access to state-of-the-art equipment, since sharing expensive equipment and highly-specialized personnel appeared to be a cost-effective solution. In the U.S. up until the early 1960s one of the principal government-sponsored programs for conservation (which was not centered in an individual museum) was carried on by the National Park Service, which cared for historic sites, notably in Washington.⁹⁵ Another prominent center for conservation science, the Conservation Analytical Laboratory (now part of the Museum Support Unit), was set up by the Smithsonian Institution to serve the museums of the Smithsonian network. Increasingly in the 1960s and 1970s conservation centers serving more than one museum were created to share highly-specialized staff and expensive high-tech equipment.⁹⁶ Generally state-funded, such centralized laboratories were established in several countries with the goal of fostering longer-term research projects. However, funding uncertainties, bureaucratic complications and changing political priorities plagued researchers who complained of

Safeguard Art", *The Globe and Mail*, June 8, 1957. From "Stolow, Doc/CLWT", National Gallery of Canada Archives, Ottawa, Ontario, Canada. Prior to setting up the laboratory at the National, Stolow was sent on a six-month tour of American and European Centers of restoration and conservation of works of art to study state-of-the art equipment and procedures. Folder 1.3-S "Restoration of Paintings. Stolow, Nathan (restorer)", National Gallery of Canada Archives and Stolow, Nathan. "Conservation and Scientific Research at the National Gallery of Canada", reprint from *Professional Public Service*, Vol. 42, No. 2, February 1963, pp. 4-7, from "Stolow, DOC/CLWT", National Gallery of Canada Archives.

⁹⁴. See for example, letter from Nathan Stolow to Alan Jarvis, Director, National Gallery of Canada, March 22, 1957. Folder 1.3-S "Restoration of Paintings. Stolow, Nathan (restorer)", National Gallery of Canada Archives.

⁹⁵. In Washington during the mid-1950s studies pertinent to conservation science were also being undertaken at the Dumbarton Oaks Research Centre and the Gardner Research Laboratory.

⁹⁶. The Intermuseum Conservation Laboratory in Oberlin, Ohio was an early fore-runner of the trend. Such centralized conservation laboratories serving several museums were established in Europe, in Mexico City (for the *Instituto Nacional de las Bellas Artes*), and in Canada (the National Conservation Research Laboratory of Canada which was founded in 1964 and expanded to become the Canadian Conservation Institute in 1972).

having to continually modify their projects due to outside pressures.⁹⁷

Although modern conservation laboratories do conduct what might be considered "basic" research (as distinct from problem-solving research seeking immediate applications), for most the primary function has been to assist in maintenance and treatment of collections. [The National Gallery of Art in Washington's longtime subsidy of a research chair primarily dedicated to fundamental research at the Mellon Institute discussed earlier is an exceptional project.]⁹⁸ Cut-backs meant that many of the conservation units created after the war were chronically understaffed and overworked almost from their beginnings. As a palliative, some institutions continued the historic habit of making contractual arrangements for specific treatment projects rather than hiring full-time permanent staff, a practice which does not favour long-term research projects.

Nonetheless, in spite of uncertain support, there is considerable evidence of increasing research activity in conservation given the proliferation of papers presented in specialized journals and at meetings. Many conservators employed in government, at major institutions and the growing ranks of conservators in private practice became involved in research projects done with minimal funding and often without direct remuneration as publications and conference papers came to be seen as a means of

⁹⁷. Stolow, Nathan. "Centralization and Decentralization of Conservation and Research Programs. A Discussion of Experiences of Four Countries". *American Institute for Conservation of Historic and Artistic Works Preprints*, 7th Annual Meeting, Toronto, Canada, 30-31 May and 1 June 1979. Washington, D.C.: American Institute for Conservation of Historic Works, 1979. pp. 132-38.

⁹⁸. More recently the work of the Getty Conservation Institute funded by the J. Paul Getty Trust based in Santa Monica, California has undertaken a number of ambitious projects. The trust was created in 1953. Funding of international conservation activities and research was expanded in the 1980s. One project involving members of the Scientific Department of the Getty Conservation Institute, was the creation of a reference bank for infrared spectroscopic analyses of various materials used in art (including artists' materials and other ingredients such as different kinds of eggs which might be used in egg tempera painting techniques). This is being done with a group of participants from many institutions called the the FTIR [Fourier Transform InfraRed Spectroscopy] Users' Group. Other work on analytic techniques has also been conducted at the Getty. See for example: Derrick, Michele R., Eric F. Doehne, Andrew E. Parker and Dusan Stulik. "Some New Analytical Techniques for Use in Conservation", *Journal of the American Institute of Conservation*. 33, 1994, pp. 171-184.

enhancing professional credentials.

Conflicts erupted over differences between hands-on conservators and conservation scientists,⁹⁹ and between American and European styles.¹⁰⁰ Yet both so-called scientific and aesthetic approaches to conservation found common ground in support of efforts to establish professional associations.

Professionalization: Associations and Training

The new conservation units participated in a lively scholarly community. In addition to participating in various scholarly associations in science and the arts, associations specifically for conservators were formed.¹⁰¹ These associations provided opportunities to discuss work on the treatment and care of collections at meetings and in articles published by a growing number of scholarly journals. Short courses on new techniques were sometimes offered. Some of these organizations launched efforts to control and regulate access to the occupations associated with art conservation, developing standards, systems of accreditation and educational programs to reflect increasing specialization in areas of expertise.

⁹⁹ For example, Harvard-trained educators and prominent conservators Caroline and Sheldon Keck promoted the need for collaboration between conservators with scientific and artistic orientations. With funding from the Rockefeller Foundation the Kecks organized a 1959 meeting on the application of science to conservation problems at the Brooklyn Museum. Keck, Caroline K. "The Position of the Conservator in the Last Quarter of the Twentieth Century", *Journal of the American Institute of Conservation*, Volume 18, 1978, pp. 3-7.

¹⁰⁰ Weil gives insights into the debate focussing on criticism which claimed that "American art conservators have neglected aesthetic considerations in a narrowly scientific concept of their professional role" and emphasizes the need for a humanistic component. Weil, Phoebe Dent. "'Visually Illiterate' and 'Historically Ignorant': The Need to Re-Examine Art Conservation's Humanistic Foundations", *American Institute for Conservation of Historic and Artist Works Preprints of Papers Presented at the Twelfth Annual Meeting*. Los Angeles, California . 15-20 May 1984, Washington: AIC, 1984. pp.86-93.

¹⁰¹ The College Art Association and the American Chemical Society sometimes have sessions devoted to conservation issues and occasionally produce publications relevant to this area. Cottingham, James and Maryan Ainsworth(editors). *Conservation and Art History*. (Thematic Issue). *Art Journal* (Published by the College Art Association). Volume 54, No. 2, Summer 1995; and Baker, Mary T. (organizer). "Polymers in Museums", *Polymer Preprints. (Papers Presented at the Washington, D.C. Meeting of the American Chemical Society)*. Volume 33, Number 2, August 1992; pp. 635-665.

One of the key professional organizations in the history of North American conservation was the Art Technical Section of the American Association of Museums (AAM) which organized sessions on technical matters related to conservation.¹⁰² Beginning in 1935, a group of North American museum professionals met and presented papers some of which were published in *Museum News*.¹⁰³ The Art Technical sessions ceased shortly after 1967 when the International Institute of Conservation's American Group began to meet separately from the AAM.¹⁰⁴

Americans were active in promoting international collaboration. In 1950 the International Institute for the Conservation of Historic and Artistic Works (called IIC) began to meet. The Institute was incorporated under British law and had headquarters at the Victoria and Albert Museum in London, England but several Americans were founding members.¹⁰⁵ The purpose of the IIC was to set professional standards in art conservation and to promote diffusion of knowledge of conservation methods, principally through its journals. The main publication of the IIC was the quarterly journal *Studies in Conservation*.¹⁰⁶ A second major publication was *Art and*

¹⁰². This included participants from Canada and Mexico. In fact the 1934 meeting at which the proposal for the Art Technical Section sessions was approved was held in Toronto, Canada.

¹⁰³. Packard, Elisabeth C.G. "Conservation Goes Public. George Leslie Stout and the Art Technical Sections". *The American Institute for Conservation of Historic and Artistic Works Preprints*, 7th Annual Meeting, Toronto, Canada, 30-31 May and 1 June 1979. Washington, D.C.: American Institute for Conservation of Historic Works, 1979, pp.86-93.

¹⁰⁴. Anonymous. "History of the AIC, Statements of Purpose, and Actual Activities", *AIC Strategic Plan*, Washington, D.C.: American Institute of Conservation, 1990, pp. 3-5. Courtesy Jay Krueger, Conservator of Modern Paintings and Member of the AIC executive, National Gallery of Art, Washington, D.C.

¹⁰⁵. It was directed by Norman Brommelle. Founding members included George L. Stout (first President), F.I.G Rawlins of the British Council for Care of Churches, Dr. Harold J. Plenderleith (who later became Director of the International Center for the Study of the Preservation and Restoration of Cultural Property in Rome), Sir Wallace K. Akers, former President of the Imperial Chemical Industries, Helmut Ruheman a conservator with attachments to the National Gallery of London, W.G. Constable a former curator at the Boston Museum of Fine Arts, Richard D. Buck, then at the Fogg, who later directed the Intermuseum Laboratory in Oberlin, Murray Pease, head conservator of the Metropolitan Museum in New York, Paul Coremans, director of the *Institut Royal du Patrimoine Artistique*, Brussels, Arthur Van Schendel, who became director of the Rijksmuseum in Amsterdam and Rutherford J. Gettens.

¹⁰⁶. Gettens considered that this new journal had basically continued the work of the defunct

Archaeology Technical Abstracts (formerly *IIC Abstracts of the Technical Literature in Art and Archaeology*). This was a survey of international publications related to conservation which appeared twice a year. Less formal communications were made in the *IIC News*. Many of the publications of the thematic proceedings of IIC meetings were so informative that they have become standard technical reference works in conservation laboratories. Another important international group, the International Committee for Conservation of the International Council of Museums (ICOM) was formed in 1967 and publishes a triennial series of papers from its 26 working groups.

Regional groups of the IIC began to form at various locations around the world, beginning with the creation in around 1958 of the IIC American Group (IIC-AG) which aimed to provide more frequent contact among members in the U.S. and Canada taking into account the problems and conditions peculiar to conservation there.¹⁰⁷ The organization concentrated on continuing education of its members in conservation concerns leaving broader issues of the museology to the AAM. In particular, efforts were made to propose standards of practice in the field of conservation.¹⁰⁸ In 1967 there was a large increase in membership which attributed to increased interest in conservation issues stimulated by the 1966 floods in Florence (site of major monuments in dominant readings of the history of Western art and architecture).¹⁰⁹ A major change

Technical Studies in the Field of the Fine Arts, which he founded but which ceased publication in 1942 when the United States entered the second world war.

¹⁰⁷. Although Gettens (1969) indicates the IIC-AG was founded in 1960 the American Institute for Conservation of Historic and Artistic Works' strategic plan indicates that IIC-AG was founded in 1958. It is likely that Gettens was indicating an approximate date. Excerpt from the *AIC Strategic Plan*, 1990, p.3.

¹⁰⁸. The IIC-AG published guidelines for practices in the U.S. notably, *Standards of Practice and Professional Relationships for Conservators* ("The Murray Pease Report") adopted in 1963, and *Code of Ethics for Conservators*, adopted in 1967. The committee was named for its chairman who died at the time that the report was completed. It also included R.J. Gettens, Sheldon Keck, Dudley Easby and Henri Courtais. The Murray Pease Committee. "The Murray Pease Report", *Studies in Conservation*, Volume 9, Number 3, August 1964, pp. 116-121.

¹⁰⁹. It is still a relatively small organization with 2,609 paid individual memberships in 1988. *AIC Strategic Plan*, 1990.

occurred in when 1970 fund-raising efforts related to the organization of an IIC international conference raised legal issues: IIC-AG's international status made it impossible to arrange for tax-deductible donations from Americans. The American Institute for Conservation (AIC) grew out of this fiscal need for "a separate, legally independent, free-standing American organization".¹¹⁰ Initially the AIC's activities and goals remained largely similar to those of the IIC-AG except for its mandate to solicit funds and its involvement with certification of members. It also began to publish the *Newsletter* and a scholarly journal, *Journal of the American Institute for Conservation*.

Many other conservation organizations were founded to serve special interests and needs. Sometimes, they were relatively informal groups which met for talks, like the Washington Region Conservation Guild which was formed in 1967 "to bring together conservators, scientist, museum curators and others interested in conservation for informal talks".¹¹¹ Others, like the Western Association of Art Conservation published widely-read bulletins featuring short research articles and news of the profession.¹¹²

Professionalization has been an constant theme in conservation literature. Increasing emphasis has been placed on formal training, with the establishment of graduate-level degrees and internships.¹¹³ For example, the American Institute of Conservation modeled its system of accreditation on the medical sciences envisaging a combination of formal training at a recognized institution with experience working in the field. (Unlike in medicine, such accreditation is still not a legally-sanctioned prerequisite for practice however.) There are three categories of membership and eleven different classifications of specialization, most of which are for "hands-on"

¹¹⁰. *AIC Strategic Plan*, 1990.

¹¹¹. Its hundred members met monthly, usually at the Museum of History and Technology (now the National Museum of American History) at the Smithsonian Institution. Gettens, 1969, p. 14.

¹¹². Twenty-five regional organizations were affiliated with the AIC in 1990.

¹¹³. Until recently only bachelor's and master's level degrees were conferred in the field.

conservation defined according to the type of artwork or artifact treated.¹¹⁴ By 1990 there were nine institutions in Canada and the U.S. offering degree programmes in conservation associated with the AIC.¹¹⁵ In addition scientists (usually holding graduate degrees, frequently with doctorates in chemistry) who work in conservation laboratories are considered for membership on an individual basis. Educators and administrators similarly may be exempted from the requirement of a degree in conservation.

Efforts by various associations to establish professional standards for the practice of conservation served to emphasize the conservator's responsibilities and control over the care and treatment of artistic and historic works. Major museums like the National Gallery of Washington have an on-duty conservator on the premises for possible emergency treatments whenever the museum is open. Many institutions have strict rules about the qualifications required for handling works of art and they frequently send conservators as couriers accompanying important works. In insurance investigations in the case of damage, conservators' "condition reports" function somewhat like medical reports as authoritative professional statements. Thus the drive towards professionalism has brought with it increased responsibilities in the form of socio-professional duties as well as in the imperative to conduct research.

An important outcome of the transition from artisanal approaches to a concept of professionalism has been that organizations have promoted communication amongst

¹¹⁴. The membership categories in increasing order of prestige are : Associate, Professional Associate and Fellow. The areas of specialization are : architectural materials, archaeological objects, books and paper, ethnographic objects, natural science, objects, photographic materials, paintings, sculpture, textiles and wooden artifacts.

¹¹⁵. These were at Harvard University, Columbia University, New York University, Queens University, State University College of Buffalo, University of Delaware/Winterthur, University of Texas at Austin, and two at the Smithsonian Institution's Conservation Analytical Laboratory. In Mexico, the leading training center is the *Escuela Nacional de Conservación, Restauración y Museografía "Manuel de Castillo Negrete"* (Ex-convento de Churubusco). Other training programs at college level also exist and provide lower-level credentials for entry into some positions as technicians.

conservators. Rather than following the traditions of secrecy of skilled tradespeople, the new discourse about the scholarly "professional" or "scientific" approach favoured an openness, allowing for the relatively rapid diffusion of information about experimentation with new media and techniques. The infrastructures provided by professional associations have also served to promote information exchange with art materials manufacturers who often send representatives to meetings. Some, like painters Henry Levison and a group from Golden Artists' Colors, have even presented research at meetings and in conservation periodicals.¹¹⁶

Early Use of Synthetic Media for Art Conservation

Some of the earliest documented uses of synthetic media in art are to be found in the work of museum conservators soon after the new chemical products became available. Accounts of eager experimentation with new media permeate discourse about the promise of scientific methods for resolving practical problems in the care of art. For example, by 1930 at the Fogg Museum, Gettens and Stout had begun using a synthetic resin as a fixative in the transfer of the paint film of wall paintings to new grounds.¹¹⁷ The resin was used to bind the particles of the friable surface together.

¹¹⁶ See for example Golden's discussion of causes of cracking in pigmented acrylic systems. Golden, Mark. "Acrylic Paint Cracking", *McKay Lodge Conservation Report*. c.1991-2. p.4 and 14. Clipping from Thea Burns, Professor of Paper Conservation, Department of Art Conservation, Queen's University; and Hamm, James, Ben Gavett, Mark Golden, Jim Hayes, Charles Kelly, John Messinger, Margaret Contompasis and Bruce Suffield. "The Discoloration of Acrylic Dispersion Media", in Gratton, David (editor). *Saving the Twentieth Century: The Conservation of Modern Materials. Proceedings of Symposium'91, A conference held in Ottawa, Canada, 15-20 September 1991*. Ottawa: Canadian Conservation Institute, 1993, pp.381-392; and Levison, Henry. "Artists' Vehicles: Accelerated Tests on Distensibility, Flexibility and Adhesion between Paint Coats", *International Symposium on the Conservation of Contemporary Art. Abstracts*. Ottawa: National Gallery of Canada. 7-12 July 1980, p. 5.

¹¹⁷ They first tried a polymerized vinyl ester. They presented a report on this at the 1930 Rome Conference of the International Museums Office established by the League of Nations and an wrote an article which was published two years later. Packard 1979, p. 87; and Stout, G.L. and Gettens, R.J. "Transport des fresques orientales sur de nouveaux supports", *Museion*, Janvier-Avril 1932, 17-18, pp. 107-112. See also Gettens, Rutherford J. "Chemical Problems in the Fine Arts", *Journal of Chemical Education*, vol. XI, No. 11, November, 1934, pp. 587-595, esp. pp. 591-92.

Already at this time (that is slightly before the artist Siqueiros began using synthetic media in his painting) conservators had begun to test a variety of new media especially artificial resins and plastics.¹¹⁸

According to Gettens most of the early literature on the new synthetic compounds was confined to journals of pure and applied chemistry and to the publications serving the paint and varnish trade. Gettens mentioned that he learned of one important category of the new materials (polyvinyl acetate) in an article in the *Journal of Physical Chemistry* and then he obtained a circular on the new materials from the American Paint and Varnish Association.¹¹⁹ Similarly, Gettens appears to have learned about other media, notably plastic media like acrylics through literature in the field of chemistry and engineering, although contact with archaeologists and architects at conferences also appears to have been a source of information on new materials.¹²⁰ Beginning in the 1940s, trade publications for clients of chemical companies sometimes carried stories about uses of new chemicals in conservation, in much the same way that they covered innovative use of their chemicals in artists' paintmaking slightly later.¹²¹

¹¹⁸. These include various preparations of nitrocellulose (with ester gum, damar and paraffin), cellulose acetate, polymerized vinyl esters, polyvinyl acetal, and commercial lacquers (nitrocellulose-phenal formaldehyde lacquer and glycerol-phthalic anhydride lacquer). Gettens, Rutherford J. and Elizabeth Bigelow, "The Moisture Permeability of Protective coatings", *Technical Studies in the Field of the Fine Arts*, Volume II, No. 1, July 1933, pp. 15-25; and Gettens, R. J. "Preliminary Report of the Measurement of the Moisture Permeability of Protective Coatings", *Technical Studies in the Field of the Fine Arts*, Vol. I, No. 2, October 1932, pp. 63-69; and Gettens, R. J. "Polymerized Vinyl Acetate and Related Compounds in the Restoration of Objects of Art", *Technical Studies in the Field of the Fine Arts*, vol. IV, No. 1, July, 1935, pp. 15-27.

¹¹⁹. According to Gettens the circular was written by H.A. Gardner on the basis of information available from the patent literature. Bancroft, W.D., "The Displacement of Equilibrium by Light" *Journal of Physical Chemistry*, XXXII (1928), pp. 529-572; and *Vinyl Resins*, Circular No. 337, American Paint and Varnish Manufacturers Association, 1928. Mentioned in Gettens, 1935, p. 16.

¹²⁰. His introductory article to the use of methyl methacrylate (later to be the basis for many artists acrylics) which was sold beginning in 1936 under the trade name Lucite by Messrs E.I. du Pont de Nemours and Company mentions a wide range of technical literature. Gettens, R. J. "The Use of Methyl Methacrylate in the Preparation of Polished Specimens of Friable Material", *Technical Studies in the Field of the Fine Arts*, Vol. IX, No. 2, October 1940, pp. 113-116.

¹²¹. For example, the Rohm and Haas magazine which featured stories on Liquitex also presented the

New Approaches to Conservation and Questions about the Reversibility of Synthetic Coatings

After the war the appropriation of synthetic media for use in conservation accelerated in many areas but concerns were raised about their reliability. One well-publicized project investigating synthetic media used in varnishes (which has already been discussed in the context of research institutes) was begun in the early 1950s by Robert Feller, then a young conservation scientist with the National Gallery of Art Fellowship at the Mellon Institute. Feller was a key figure at a 1957 conference on protective coatings which led to the publication of a landmark text concerned with both traditional and synthetic media used in art.¹²² Concerns about the new media were also evident in international circles. The International Council of Museums felt that "techniques of preserving and restoring works of art were in the process of being profoundly affected by the use of synthetic materials" and appointed a working group to study the matter.¹²³

Innovative use of new materials was occurring rapidly in all areas of

use by conservators in Vienna of an acrylic resin (B-72) in conservation. Anonymous. "Acryloid Helps Preserve Art Treasures. Decorative Art from the Famous Vienna Collection. Now on Tour in America. Is Protected from Tarnish and Soil by Acrylic Coating." *The Rohm and Haas Reporter*. Volume VII, Number 3, June-July, 1950, pp. 14-15.

¹²². The Eli Lilly Endowment sponsored the conference which was hosted by Richard Buck at the Intermuseum Conservation Laboratory in Oberlin, Ohio. The publication was prepared by Robert Feller (National Gallery of Art Fellow at the Mellon Institute in Pittsburgh), Nathan Stolow (Technical Advisor at the National Gallery of Canada), and Elizabeth H. Jones (a conservator at the Fogg Museum at Harvard University). Feller, R., Stolow, N. and Jones, H. *On Picture Varnishes and Their Solvents*. Washington: National Gallery of Art, 1971 (2nd edition). The preliminary edition was published by the Intermuseum Conservation Association in 1959.

¹²³. The working group, formed in 1959 under the chairmanship of A. Van Schendel of the Rijksmuseum in Amsterdam included R. Feller of the Mellon Institute. The group prepared a survey of the principle materials, their trade names, and an index of producers and manufacturers which is a valuable, though incomplete source for information about practices at the time. It covers thermoplastic varnishes, transparent sheets, adhesives and consolidants, ultraviolet absorbers, moulding or embedding materials, and textiles. Unfortunately it does not cover any of the proprietary brands of paints used by conservators but is nonetheless informative since it provides some general information about the chemical composition of products by trade name which is often difficult to obtain without undertaking tests. International Centre for the Study of the Preservation and the Restoration of Cultural Property. *Synthetic Materials Used in the Conservation of Cultural Property, Works and Publications V*. Rome: International Council of Museums, 1963.

conservation practice. Many publications appeared on techniques and problems.¹²⁴ In the area of painting conservation synthetic media had been introduced in the 1930s and by the 1950s they were widely used as paints, coatings, adhesives, in stretchers, packing and as alternatives to linings. However, the use of synthetic lacquers and paints in picture conservation had become controversial. As discussed in connection with the work at Mellon Institute, concerns arose when it was found that the expected characteristics of some synthetic coatings changed with aging and Feller had developed alternatives using synthetic media which he believed were safer for protective coatings (like varnishes) although not all researchers agreed with his interpretation of his findings.¹²⁵

As mentioned in the discussion of Magna paints made by Bocour and Golden, commercially prepared acrylic resin paints made for artists (particularly Magna) became popular for the restoration of paintings by the 1960s because these spirit-soluble paints were theoretically reversible, that is they could be redissolved and removed from many

¹²⁴ Howie, Francis. "Materials Used for Conserving Fossil Specimens since 1930: A Review", in Brommelle, N.S., Pye, Elizabeth, Smith, Perry and Garry Thomson (editors) *Adhesives and Consolidants*. Preprints of the Contributions to the Paris Congress, 2-8 September, 1984, London: International Institute for Conservation of Historic and Artistic works, 1984, pp. 92-97; Allen, N.S., Edge, M. and Horie C.V. *Polymers in Conservation*, (Proceedings of an International Conference organized by Manchester Polytechnic and Manchester Museum). London: Royal Society of Chemistry, 1992; Horie, C.V. *Materials for Conservation. Organic Consolidants, Adhesives and Coatings*, London: Butterworths, 1987; Werner, Anthony. "Synthetic Materials in Art Conservation", *Journal of Chemical Education*, Volume 58, Number 4, april 1981, pp. 321-324; and De Witte, E. Resins in conservation: Introduction to their Properties and Applications," in Tate, J.O., Tennent, N.H. and J.H. Townsend (editors). *Proceedings of the Symposium "Resins in Conservation" held at the University of Edinburgh, May 1982*. Edinburgh: Scottish Society for Conservation and Restoration, 1983, pp. 1-1 - 1-6.

¹²⁵ Feller alludes to some of the history of the controversy dating from a 1953 paper by English conservators Arthur Lucas and Norman Brommelle of the National Gallery in London on the failure of synthetic materials in picture conservation. According to Feller, "the paper contained certain errors and was not technical". Feller, in the capacity of Fellow of the National Gallery of Washington explained that his support of the use synthetic resins in the publication of the monograph on varnishes might "appear to be the formal answer to Messrs. Lucas and Brommelle". Letter from R. Feller to R. J. Gettens, March 24, 1955. "Feller-Gettens Correspondence" Folder, Gettens Archives, Freer Gallery of Art, Smithsonian Institution, Washington, D.C. For references to more recent technical articles on the matter see Horie 1987, pp. 103-104.

types of surfaces. Thus in principle the object could be recovered in its "original" state (at the beginning of the conservation treatment) in the event that opinions changed about the treatment. However in practice sometimes structural changes at a molecular level (called cross-linking) made acrylic resin coatings impossible to remove without damaging the work, as in the case of varnishes.

The search for reversible coatings was part of a radical reorientation of conservation and restoration practices in the twentieth century with broad social and epistemological significance for the practice of conservation and for the relations between conservators and artists. Past practices had involved deep cleaning, varnishing with hard resins and "oiling out" canvases by covering them with a tacky layer of linseed oil which picked up dirt, mold spores and formed a tough skin over paintings which was almost impossible to remove.¹²⁶

By mid-century, trends in conservation were leading away from such invasive practices. For example, even the need for heavy inpainting (for example, to fill in gaps in partially damaged works) and overpainting was disputed.¹²⁷ At issue was not merely the integrity of the artist's original vision, but the increasing awareness that multiple interpretations of works of art in successive historical periods or in different cultural contexts could lead to very different decisions about the treatment of art objects, especially in cases where damage was due to "natural" deterioration from ageing.¹²⁸

¹²⁶. Boustead 1960 pp. 121-131.

¹²⁷. There was also diversity of opinion about the proper methods and materials for inpainting. Michaels, Peter (chair), Packard, Elisabeth, Feller, R. and Pommerantz, Louis. "In Painting : A Panel Discussion", *American Institute for Conservation of Artistic and Historic Works Preprints*, Dearborn Meeting, 29 May- 1 June 1976, Washington: American Institute for Conservation, 1976, n.p.

¹²⁸. AIC, *Inpainting: A Panel Presentation*, American Institute for Conservation Preprints, Dearborn Michigan, 26 May-1 June, 1976. For a discussion of the importance of changing interpretations of the socio-symbolic meaning of a painted altarpiece and the impact of these readings on its treatment see: Akrich, Madeleine. "Le polyptique de Beaune : la construction locale d'un universel". *Sociologie de l'art*. (réd. Raymonde Moulin) Paris: Documentation Française, 1986. pp. 425-432; Akrich, Madeleine. "Le Jugement Dernier": Une Sociologie de la Beauté", *L'Année sociologique*, vol. 36, 1986, pp. 239-277.

The oldtime practice of matching the materials and application techniques of the original to create a permanently altered artwork was being questioned as conservators became aware that their own values were developed in a particular socio-historical context. In other words, conservators increasingly recognized that attitudes towards restoration and conservation of objects vary. Awareness of differences in cultural expectations regarding the reception of works of art have underlined the realization that there is no simple absolute "truth" which could serve as a guideline for care and treatment of works in every situation. Furthermore, the notion of allowing the historical life of the object to remain visible (including the damage it had sustained) became an issue.¹²⁹ For example, some connoisseurs and curators began to demand that art objects be displayed in such a way as to show which portions of the object are the "original" and which ones the work of conservators. In addition the idea that the effects of aging are part of the history of the artistic and historic work became intertwined with ethical concerns about the intentions of the creators, notably that artists may have anticipated change as part of the intended "life" of the work.¹³⁰

¹²⁹ Interestingly, although scientific methods had been initially proposed as a means of avoiding overly invasive treatments they came to be viewed by some as destructive in calls for a re-introduction of aesthetic and ethical elements in a "philosophy of action". For example, "heritage-conscious" safeguards to protect the "layer of obscuration and patina" acquired by works over the centuries were invoked to prevent "the danger of harm through scientific curiosity and subsequent ignorance". Althöfer, Heinz. "Historical and Ethical Principles of Restoration", *20th Century Paintings*. ICOM Preprints, 6th Triennial Meeting. Volume II. Rome: International Council of Museums Committee for Conservation, 1981, n.p. (section 81/11/1).

¹³⁰ Further complications arise in the interpretation of ethical and aesthetic issues in the care and treatment of recent works which are not necessarily predicated on the notion of a permanent art object. As conservator Barry Briggs pointed out the issue of the hand of artist and the original work is not always relevant to contemporary artworks since the artists' intention may involve deterioration of the physical object. The controversial dress made of raw meat by artists Jana Sterbak is an example of a work which was planned to be replaced by new versions fabricated by conservators. In many cases the type of damage is crucial, for example, gradual deterioration of the art object may be acceptable or even expected but if the object is vandalized repairs would be expected. Briggs, Barry. "Changing Conservation Methodology: Bridging the Gap Between Materials and Meanings in Contemporary Art", Art History and Art Conservation Session, University Art Association of Canada Meeting, Kingston, Ontario, November 7-9, 1991; Davenport, Kimberly. "Impossible Liberties: Contemporary Artists on the Life of Their Work over Time", *Art Journal*, Volume 54, Number 2, Summer 1995, pp. 40-52. On this matter in the 19th-century see: Carlyle, Leslie. "The Artists' Anticipation of Change as

Papers in conservation journals increasingly stressed caution, noting also that knowledge of materials is imperfect. Some past treatments irretrievably damaged works of art, and, even new materials thought to be safe have proven harmful or unsatisfactory. Discourse about the use of new materials gradually abandoned the positivistic assurances of partisans of modern science. A more mitigated interpretation of the potential of any material emerged. This new trend toward relativism about aesthetic values, was marked by an enhanced sense of the limits of applications of science and new materials in conservation. In the words of Ross Merrill, head of conservation at the National Gallery of Washington:

"We're beginning to mature in the application of science to the museum field. All we have are remnants of the past, and everything we do to conserve them is a compromise. Their perfect preservation doesn't exist, and their perfect restoration cannot exist."¹³¹

From the point of view of one manufacturer of synthetic media for artists and conservators who often confers with conservators on technical matters, this caution and concern with removability on the part of conservators may be perhaps a bit excessive:

"They are in such turmoil right now as I see it. They're so afraid of doing anything, anything that's not totally reversible. . .they'd rather see something rot than have to do a treatment that might impart their hand onto the work as opposed to the artist's."¹³²

Issues in the Conservation of Art made with Synthetic Painting Media:

Doubts and questions about the durability of synthetic media had begun to appear in connection with their use in conservation well before there was much concern about the use of synthetic paints in art. Although artists began trying out new media as soon as it was available, it was not until the 1950s that artists' appropriation of new

Discussed in *British Nineteenth Century Instruction Books on Oil Painting*, *Conservation Today* (United Kingdom Institute of Conservation), 1988, pp. 62-67.

¹³¹. Ember, Lois R. "Science in the Service of Art", *Chemical and Engineering News* (American Chemical Society). December 3, 1984, pp. 13-23.

¹³². Interview with Mark Golden by Jan Marontate, July 1991 Tape #4.

media skyrocketed. Not until later still, in the 1970s, did conservation issues related to the use of these materials in painting attract significant attention.¹³³ (The status and market value of contemporary painting was on the rise and most conservatorial work in the two decades after the war was still on historical pieces, simply because that's what collectors would pay to have done. As in any profession, interest had tended to focus on active areas where there was a demand for work.)

There are many different types of problems in the conservation of 20th-century paintings made with synthetic media. The identification of media has constituted an important line of investigation.¹³⁴ Artists used many different types of synthetic materials in the form of commercial paints, lacquers, artists' colors, and various chemical products they purchased and prepared themselves. The precise identification of media cannot be done with any accuracy with the naked eye, especially in the case of mixed media. Yet laboratory tests can be costly, time-consuming and are often inconclusive.¹³⁵ Constant modifications, complex formulas and secrecy on the part of paintmakers and chemical manufacturers made even common proprietary brands difficult to identify.¹³⁶ Artists further complicate the conservators' chore with eclectic

¹³³. Publicity about deterioration of modern arts and about the impermanence of some synthetic media have appeared from time to time in the popular press. Wyer, E. Bingo. "Flaky Art. Modern Masterpieces are Crumbling", *New York Magazine*, January 25, 1988, pp.42-48.

¹³⁴. Developments of new testing techniques has been intense since the 1950s. The FTIR spectroscopy User's Group mentioned above is one example of a project which aims to facilitate the identification of media by creating a sort of data base of identified materials. Recently efforts to develop low-tech tests have been undertaken by conservators at the Conservation Analytical Laboratory, Smithsonian Institution. Klein, Elyse, Jia-Sun Tsang and Mary Baker. "Non-Instrumental Techniques for Characterization and Identification of Artist's Acrylic Paint", in Baker, Mary T. (organizer). "Polymers in Museums", *Polymer Preprints. (Papers Presented at the Washington, D.C. Meeting of the American Chemical Society)*. Volume 33, Number 2, August 1992; pp. 650-651; Plesters, Joyce. "Cross-sections and Chemical Analysis of Paint Samples," *Studies in Conservation*, Volume 2, Number 3, April 1956.

¹³⁵. Unfortunately too some of the elaborate testing has been done on undated samples limiting the ease of applicability of the research to treatment problems.

¹³⁶. The interaction of the different chemicals used in various formulations also adds to the complexity of analysis and may affect the longevity of the material. Williams, Scott. "Commercially Prepared Artists' Varnishes and Media", *Why Study Technique: Know Your Painting*. Gerry Hedley Memorial Forum, April 23-25, 1992.

studio practices, often using a staggering number of materials in a single work. This diversity of products and practices prompted efforts by conservators to devise systems to collect information about materials at the moment of acquisition of recent works. It has also stimulated projects aimed at reconstructing and documenting the recent history of artistic practices.¹³⁷ Better initial information about materials and techniques allows conservators to narrow down the range of possibilities when deciding on testing procedures and treatment options.¹³⁸ But even in the case of relatively recent works done by living artists, the artists themselves do not always know or recall what materials they used. There has also been a tendency in the past to simplify technical data, for example, identifying an oil-compatible acrylic resin with the moniker "oil paint", since distinctions between synthetic paints and traditional preparations were not well established when the new media emerged on the art scene or were acquired by collectors. Thus, for example the mention of "oil on canvas" does not exclude synthetic media compatible with oil and turpentine (like the acrylic resin artists' paint Magna or the pyroxylin automotive lacquer Duco). Lack of standardization in terms contributed to the confusion. Slippages with regard to the precise dates for the introduction of new materials and constant tinkering with formulas by paintmakers have presented additional obstacles to the study of the impact of introduction of synthetic paint on painting.

Studies on the treatment and aging of art made with synthetic paint media used by artists burgeoned as demand for care of modern paintings increased. Some of the experiences in using synthetic media for conservation have been useful in anticipating problems with art. However, the requirement for art can be quite different. For

¹³⁷ Weiss, Karen and Stoner, Joyce Hill. "Documenting Contemporary Art Collections: A Survey". *ICOM Committee for Conservation, 6th Triennial Meeting, Ottawa 1981, Working Group on 20th Century Paintings. Volume II*. London: ICOM, 1981, pp. 81/6/1-1 -1-7.

¹³⁸ The influential, though not fully documented work on the history of the use of synthetic media in painting by conservator Robert Lodge has been used by many conservators as a rough guide to dating "first" appearance of different media. Lodge, Robert G. "A History of Synthetic Painting Media with Special Reference to Commercial Materials", *AIC Preprints*, 1988, pp. 118-127.

example, the tendency of some synthetic resins to become insoluble with age may actually be an advantage in art because it makes paintings less likely to be altered by solvents during cleaning.¹³⁹ An early well-publicized paper in this area concerned the cleaning of color field paintings by artists like Helen Frankenthaler, Kenneth Noland and Morris Louis.¹⁴⁰ The paintings were cleaned in preparation for an exhibition and the article by the conservator was published in the exhibition catalogue (even though exhibition catalogues were normally the territory of curators, art historians and critics). It thus reached a wide public. This and other articles by conservators on the materials and techniques of painters which began to appear in exhibition catalogues at about this time constitute important sources for knowledge about specific artistic practices, and about the history, and characteristics of synthetic media used in art.¹⁴¹ These articles point to a heightened interest in materials and techniques beginning in the late 1960s as well as to a possible rise in the status of the conservator who was admitted as a participant in authoritative discourse about art. Significantly these publications are

¹³⁹. Tsang, Jia-sun, Martine Barras and David Erhardt, "The Medium is Our Message: Modern Paint Media, Its Commercialization and Conservation", *Saving the Twentieth Century. Symposium '91 Abstracts*. Ottawa: Canadian Conservation Institute, September 15-20, 1991, p. 24.

¹⁴⁰. It in fact focusses more on the difficulties of cleaning raw or lightly primed canvas and describes a rather low-tech but laborious technique. Originally given as a paper at a meeting of the International Institute for Conservation of Historic and Artists Works (American Group) in Oberlin, Ohio, June 1971, the paper was included in the exhibition catalogue for a 1974 show of paintings for which the techniques were developed called *The Great Decade of American Abstraction: Modernist Art 1960 to 1970*. The paper was first published in 1972 in a collection of conference proceedings. Watherston, Margaret M. "Problems Presented by Color Field Paintings. Cleaning of Color Field Paintings", *Conservation of Paintings and the Graphic Arts*, Preprints of Liston Congress, October 1972, London: International Institute for Conservation of Historic and Artistic Works, 1972, pp. 830-841. It was so popular that it was reprinted in a bound version for separate distribution. Watherston, Margaret M. *The Cleaning of Color Field Paintings*. Houston: Museum of Fine Arts, 1974. Leonard Bocour Papers. Courtesy Mrs. Ruth Bocour, New York City.

¹⁴¹. For example: Rudenstine, Angelica "Morris Louis' Medium", in *Morris Louis 1912-1962*. Boston: Boston Museum of Fine Arts, 1967, pp. 79-80; Upright, Diane Hedley. "The Technique of Morris Louis", in *Morris Louis. The Complete Paintings*, New York: Abrams, 1985, pp. 49-58; Barclay, Marian. "Materials Used in Certain Canadian Abstract painting of the 1950s," in Leclerc, Denise. *Crisis of Abstraction in Canada*, Ottawa: National Gallery of Canada, 1992, p.228; and Webster-Cook, Sandra. "A Short History of Pyroxylin-Based Paints", in Boyanoski, Christine. *The Artists' Mecca. Canadian Art and Mexico*. Toronto: Art Gallery of Ontario, 1992, pp. 49-52.

accessible to historians, artists, art students, dealers, collectors and the general public thereby reaching beyond the disciplinary boundaries of conservation and fulfilling a broader educational function than publications in specialized journals.

Conservation issues related to the water-borne acrylic paints made specifically for artists have been of particular interest to artists, manufacturers and collectors because these paints have been (and still are) very widely used. (The water-borne acrylic artists' paints which are sometimes called "synthetic polymer emulsions" or "acrylic emulsions" by artists and paintmakers are usually referred to by conservators as dispersions, which they feel more accurately reflects their physical chemistry.¹⁴²) The composition of the different brands, has changed over the decades, therefore even paints of the same brand vary over time. Certain disappointing patterns have emerged given the initial claims of manufacturers about their clarity, resistance to yellowing and general permanence, notably regarding discoloration and brittleness of certain mixtures.¹⁴³ Various conclusions have been drawn about prospects for longevity of these media ranging from pessimistic to cautiously optimistic as a result of studies of aging using accelerated tests and simple observations.¹⁴⁴ For example, researchers who examined

¹⁴². According to Howells an emulsion is a combination of two liquids whereas a dispersion consists of particles in liquid. When applied the "wet" water-borne acrylics consist of dispersed molecules in liquid (water usually) which "dries" by the evaporation of the water. The particles in suspension come together (coalesce) to form a film in ideal circumstances. However, the acrylic film thus formed never really becomes a rigid solid in that it actually tends to behave like a thick liquid at common ambient room temperatures, at times sagging and moving perceptibly depending on its exact composition. Howells *et al.* 1984, p. 36 and Krueger 1992.

¹⁴³. See for example the discussion of support induced discoloration in Hamm *et al.* 1993. Some of the issues raised in connection with synthetic media are of course related to more general problems in conservation such as for example mechanical and structural aspects of easel paintings. Keyser, Barbara Whitney. "Restraint without Stress, History and Prospects: A Literature Review of Paintings as Structures", *Journal of the American Institute for Conservation*, 24, 1984, pp. 1-13.

¹⁴⁴. Howells, Rachel, Burnstock, Aviva, Hedley, Gerry and Hackney, Stephen. "Polymer Dispersions Artificially Aged", in Brommelle, N.S., Pye, Elizabeth, Smith, Perry and Thomson, Garry. *Adhesives and Consolidants, Preprints of the Contributions to the Paris Congress*, 2-8 September 1984, London: International Institute for Conservation of Historic and Artistic Works, 1984, pp. 36-43; and Whitmore, Paul and Val Colaluca. "Natural and Accelerated Aging of an Artists' Acrylic Paint Medium", Baker, Mary T. (organizer). "Polymers in Museums", *Polymer Preprints. (Papers Presented at the Washington, D.C. Meeting of the American Chemical Society)*. Volume 33, Number 2, August 1992.

the body of acrylic paintings in the collection of the Museum of Modern Art in New

York concluded that

"they are in quite good condition, unless they have been mishandled or subjected to extreme environments. Of course, they have only been in existence for less than a half a century and we are unable to observe their long-term natural degradation."¹⁴⁵

According to conservator Jay Krueger, "variations in the formulation of the paints, in usage, and especially in subsequent aging" have proven problematic for conservators.¹⁴⁶

Paint layers that were applied in adverse conditions (such as very low humidity, very high or very low temperatures, or with excessive thinning) can result in an open porous

film that accumulates stains, grime and pollutants. Furthermore, according to Krueger :

"these films are effectively liquids at or near room temperature, and dust, grime from careless handling, or marks and stains can become imbibed into the resin matrix. The problems of surface tack or cold flow are compounded by the electrostatic character of the polymer and the possibility of attracting airborne particulate matter to this delicate surface."¹⁴⁷

Paintmaker Mark Golden echoed this concern:

"The major problem of the acrylic today for the conservator is the softness of the materials. They gather dust. Dust can become embedded in the surface and for the conservator it's very difficult to get it out."¹⁴⁸

Research by conservators alerted artists, paintmakers and chemical suppliers to such degradation problems, encouraging modifications in the formulations of products to eliminate the use risky polymers in artists' materials. However, even very meticulous paintmakers like Golden have pointed out with some humour that the exacting scrutiny

pp. 652-3.

¹⁴⁵. Stringari Carol and Pratt, Ellen. "The Identification and Characterization of Acrylic Emulsion Paint Media", *"Saving the Twentieth Century: The Conservation of Modern Materials, Proceedings of a Conference"*. Ottawa: Canadian Conservation Institute, September 15-20, 1993, pp.411-437.

¹⁴⁶. Krueger, Jay. "Material Dilemmas: The Artist's Interest in Polymers", in Baker, Mary T. (organizer). "Polymers in Museums", *Polymer Preprints. (Papers Presented at the Washington, D.C. Meeting of the American Chemical Society)*. Volume 33, Number 2, August 1992; p. 645.

¹⁴⁷. Krueger, Jay. "Material Dilemmas: The Artist's Interest in Polymers", typescript of talk given at "Polymers in Museums" Symposium, *Polymer Preprints. (Papers Presented at the Washington, D.C. Meeting of the American Chemical Society)*, August 1992, p. 5. Courtesy Jay Krueger, Conservator of Modern Painting, Department of Conservation, National Gallery of Art, Washington, D.C.

¹⁴⁸. Interview with Mark Golden by Jan Marontate, July 1991 Tape #4.

to which acrylic paints have been subjected by conservation scientists is unprecedented in the history of painting materials. In his words:

"The same rules don't apply to oil paintings. We've talked about it. One of the conservators said if they just tried to introduce oil paints right now it would probably never go. Because the stuff cracks and it goes yellow . . ." ¹⁴⁹

Conservators, Art Education and Art Materials

Conservators with a penchant for scientific method, like Gettens, may have provided a point of entry of new materials into the various art worlds in the North Eastern U.S. during the New Deal era and after through their contacts with both manufacturers and artists. Conservators interact with artists and representatives from artists' groups in various contexts, notably: at meetings on standards for art materials, in consultations about treatments done on works by the artists or because their advice is solicited. They also sometimes write technical articles for scholarly journals or in art magazines such as *American Artist* or they are involved with meetings related to studio art or art history. ¹⁵⁰ For example in 1977, three conservators were invited to discuss synthetic painting media in a publication of the College Art Association, a U.S. society of professors of studio art and art history.

Many art conservators have studied in studio art or art history programs and some even continue to lead "parallel" careers as part-time artists. ¹⁵¹ Hands-on art conservators have an excellent knowledge of artistic technique and materials making them ideal sources of technical information. Indeed, in the past a few art conservation programs have stated that one of their goals was to share their technical knowledge with

¹⁴⁹. Mark Golden Interview 1991.

¹⁵⁰. Sometimes conservators also organize sessions in meetings of artist or art historians such as the College Art Association or the Canadian University Art Association. Pommerantz, Louis, Goist, David C., and Feller, Robert L. "Conservators Advise Artists", *Art Journal*, XXXVII, Fall 1977, pp.35-39.

¹⁵¹. For example, Ross Merrill, head curator at the National Gallery of Washington was recently featured in article about his work as a painter. Doherty, Stephen, "Expert Advice on Landscape Painting", *American Artist*, 60, April 1996, pp. 22-29, 68.

artists.¹⁵² For example, when he discussed the hiring of Gettens in 1928 (the first chemist to work on conservation at the Fogg Museum) Stout emphasized on the importance of educating living artists and developing reliable materials:

"Our hope was to benefit the painters who were practising and wanted to learn how to prevent some of their mistakes by knowing a little more about what they were using. There was really a big gap in the whole sequence of art instruction. Materials were highly ignored and very little was done about them in art schools and with the exception of Edward Forbes' course [called "Methods and Materials of Painting" offered in the Fine Arts Department] at Harvard at that time I don't know of many others in this country that paid much attention to them."¹⁵³

Testimony by artists about trends in art education indicate that many programs continued not to provide in-depth training in materials and techniques.

There are records of occasional lectures to artists about technique by various experts, including conservation scientists like Gettens. Gettens' example points to possible limiting factors in communications between artists and some types of conservators (particularly "art scientists"). Gettens' scientific rather than artistic orientation may have limited the effectiveness of his contacts with artists, of which there is very little evidence in his correspondence. It is questionable to what extent he was able to communicate useful information to non-scientists given his propensity to depict his work with art as primarily a speciality in applied chemistry which he felt devolved from the chemical basis for physical existence of all art objects. In his words:

"That there should be a relationship between chemistry and fine arts can easily be realized when one stops and considers that the pictorial and plastic artist expresses himself in substances and materials which are made from chemical elements. The artist selects his materials primarily for their physical properties, among which are color, texture, hardness, toughness, and working qualities. The more careful artist takes into account the chemical properties of his materials; that is, he considers their compatibility with other materials and their

¹⁵². Recall for example the stated purpose of the National Gallery Fellowship at the Mellon Institute in 1950.

¹⁵³. Transcript of interview with George Stout by Paul Karlstrom, recorded at Stout's home in Menlo Park, California, March 10, 1978. Archives of American Art, Smithsonian Institution, Washington, D.C. Tape #1, pp. 3-4.

chemical stability to the agencies of time. Unfortunately, many artists have given little or no attention to the chemical properties of their working materials.

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Of course most artists neither know nor are interested in studying chemistry. By extension the highly technical nature of many studies in conservation of synthetic media and the fact that many are written in turgid prose make some types of research by conservation scientists effectively inaccessible to artists. In addition much of the research done by conservators on synthetic media is recent and therefore conservators generally probably had little direct effect on the early use of synthetic media by artists. Indirectly however, the opinions of conservators about the new media did certainly filter through channels to reach artists by the 1960s, notably through contacts between conservators and art educators and writers of technical widely-distributed advice columns. One opportunity for contact was through work on commercial standards of artists' paints which will be discussed at the end of this chapter.

In spite of occasional contacts, some conservators complain of isolation. The lack of regular opportunities for communication with other categories of people involved with materials and techniques has been bemoaned by conservator, author, historian and educator Barbara Keyser. Keyser recognized that the problem of advising the artist about modern materials is inherently difficult :

"First, many of the materials available now are high-technology manufactured products. Their exact composition is not known, and even if it were, these products do not lend themselves to modification by non-technical persons. Second, there is still much that is simply not known about the behaviour and stability of paintings as complex physical and chemical systems. . .

Last, much of the problem is a lack of interdisciplinary communication."155

Nonetheless Keyser maintained that the modern conservator has only weak links, if any,

154. Gettens, Rutherford J. "Chemical Problems in the Fine Arts", *Journal of Chemical Education*, vol. XI, No. 11, November 1934, p. 587.

155. Keyser, Barbara. "Encyclopedias of Ignorance: A Critical Look at Twentieth-Century Artists' Manuals" *International Symposium on the Conservation of Contemporary Art. Abstracts*. Ottawa: National Gallery of Canada, 7-12 July 1980, pp. 42-43.

to the various categories of people involved with techniques and materials of the artist (see Figure 1a and 1b). In particular, according to her historical schema there is a dearth of contacts between conservators, art educators and artists. In Keyser's schema, medieval artists were directly involved with the preparation of their own materials as part of their craft, whereas by the 19th century artists' colourmen made artists' paints. These colourmen had variable but relatively weak contacts with academic training, manuals and artists. By the twentieth century, industrial manufacturers and conservators became part of the schema but without firm connections to other networks involved with the development and diffusion of techniques and materials.¹⁵⁶ Indeed as Keyser depicted the situation, contacts between producing artists and art educators are virtually non-existent. In Keyser's ideal schema firm lines of communication would connect all participants in the development and use of artists' materials: artists, art educators, art material manufacturers (like paintmakers), industrial material manufacturers (like chemical companies), authors of artists' manuals and conservators.

One of the principal sources of information about conservation concerns for practising artists has been through technical advice columns and artists' handbooks on techniques and materials. Authors of these books, some of whom were also practicing art restorers, were active in discourse about standards for art materials and comprise an important group for understanding the diffusion of information about synthetic media in the arts.

¹⁵⁶. Some authors have stressed the impact of changes in industrial products on art materials at a much earlier date. For example Callen has discussed changes in oils and mechanization of canvas manufacture with respect to the materials and techniques of the French Impressionists in the 19th century. Callen, Anthea. *Techniques of the Impressionists*, London: Orbis, 1982.

Discourse on the New Media in Technical Advice Columns and Artists'

Handbooks

Writers of technical advice columns for artists and authors of artists' handbooks were actively involved in the diffusion of information about synthetic media. Some of these authors were avowedly interested in establishing normative practices and openly tried to exercise their influence on the reception of modern techniques and materials (both pro and con, in different ways at different times). These advice-givers engaged in lively debates about "correct" techniques and reliable materials basing their authority on varied appeals to tradition, experience, academic credentials, scientific research, aesthetic and ideological arguments. Their publications covered a considerable range, some were highly specialized treatises for connoisseurs, historians and collectors, while others were clearly intended as studio companions for practicing artists and many were apparently conceived as guides for amateur hobbyists. Conservators and paintmakers read them too and sometimes were consulted by the authors during preparation of the manuscripts.

Models, Forerunners and Influences: English and German Handbooks for Artists in Use in the 1930s

In North America until the 1930s, most of the standard English-language reference books on artists' techniques were 19th and early 20th century works by British authors which of course treated only traditional and historic materials.¹⁵⁷ In the mid-

¹⁵⁷ Gettens included the British authors Church, Eastlake, Laurie and Merrifield as current references in his 1941 bibliography for the short course on materials he gave to Canadian artists at the Kingston Conference in 1941. Laurie was a professor of chemistry at the Royal Academy in London, Eastlake was the 19th-century translator of Goethe's book on colours, Mrs. Merrifield had done a translation of Cennino Cennini's *Libro del'arte*. Church, Sir Arthur. *The Chemistry of Paints and Painting*. London: Seely, Service and Co. 1915 (4th edition); Laurie, A.P. *The Materials of the Painter's Craft*, Philadelphia: Lippincott, 1911; Eastlake, Charles L. *Materials for a History of Oil Painting*, 2 volumes, London: Longmans, 1847 and 1869; and Merrifield, Mrs. *Original Treatises on the Art of Painting*, London: Gilpin, 1849. In addition they included references to works by Daniel V. Thompson, Ralph Mayer and F. Weber as well as the journal he edited, *Technical Studies in the Field of the Fine Arts*. See also Carlyle, Leslie Anne. *A Critical Analysis of Artists' Handbooks, Manuals and*

1930s Daniel Thompson, a Yale professor educated at the Courtauld Institute in England, also produced several carefully-researched works on historic painting techniques; and his work on tempera in particular became a popular artists' reference manual.¹⁵⁸

Paintmakers, conservators and artists also refer to contacts with German authorities, in particular Max Doerner (1870-1939), and other members of the "German Society for Rational Painting Methods" (*Deutsche Gesellschaft für rationelle Malverfahren*), as well as chemist Alexander Eibner and conservator Helmut Ruheman.¹⁵⁹ The German authorities on art techniques were surprisingly conservative in their appropriation of modern materials given the fact that many of the new synthetic media had been developed by German chemists, notably by specialists in polymer chemistry. However, accounts by paintmakers and artists stress the importance to them of the systematic approach to technique of German experts on art materials.

There was a strong tradition of interest in the study of art materials in Germany and there were important precedents for the collaboration of artists, paintmakers and other interested parties in the development of standards.¹⁶⁰ The German Society for Rational Painting Methods had long provided a forum for various individuals interested in painting materials and techniques. In 1881 the chemist and art lover Adolph Keim,

Treatises on Oil Painting Published in Britain between 1800-1900: with Reference to Selected Eighteenth Century Sources. Ph.D. Thesis. Courtauld Institute of Art, University of London, 1991.

¹⁵⁸. He also did a translation of the 15th-century artists' handbook by Cennino Cennini. Thompson, Daniel V. *Materials of Medieval Painting*. New Haven: Yale University Press, 1936; and Thompson, Daniel V. (with a foreword by Bernard Berenson). *The Practice of Tempera Painting*. New Haven: Yale University Press, 1936.

¹⁵⁹. First called the "German Society for the Promotion of Rational Painting Methods" (*Deutsche Gesellschaft für Beförderung rationeller Malverfahren*).

¹⁶⁰. Chemist Alexander Eibner (1862-1935) in particular was an internationally recognized authority on chemistry as applied to art and an important model for American conservation scientist Gettens. Gettens Archives, Freer Gallery of Art, Smithsonian Institution. Eibner's best known work was a text for artists, housepainters, lacquerers, manufacturers and merchants. Eibner, Alexander. *Malmaterialienkunde als Grundlage der Maltechnik für Kunststudierende, Künstler, Maler, Lackierer, Fabrikanten und Händler*. Berlin: Springer, 1909.

known for his development of a mineral-based mural painting technique, founded a research center for the study of painting materials. Five years later in 1886 the Society was founded.¹⁶¹ Board members of the institute eventually included art educators, representatives of artists' unions, and members of the association of colour manufacturers and dealers.¹⁶² Early activities of the society included the preparation of a list of approved colours (*Normalfarben*) and control of trade materials to eliminate unreliable materials. For example in 1905 the Society held a congress in Munich on adulteration and falsification of artists' paints.¹⁶³ Offshoots of the Society pursued its aims on a national scale, involving schools, government officials, art materials consumers and producers in various projects to improve standards.

A tradition of "transdisciplinary" collaboration on efforts to improve art materials was thus well-established in Germany before comparable efforts began in North America. Yet, by the 1940s, influences were clearly being felt in both directions between American and German researchers in the field. For example, the German society had long published a journal which during wartime appeared almost to mimic the style of the influential English-language quarterly which had been put out by Gettens at the Fogg Museum.¹⁶⁴ Nonetheless there is evidence that German work on art materials

¹⁶¹ Keim adapted a method called stereochromy. Siqueiros learned Keim's technique from a German chemist in South America in 1933 and an adaptation of this technique using ethyl silicate was advocated by Gutiérrez. See Mayer, Ralph. *The Artists' Handbook of Materials and Techniques*. New York: Viking Press, 1970 revised version of 1940 original, pp. 361-2. Hurlburt, 1989, p. 219.

¹⁶² Anonymous. "Ueberblick", *Technische Mitteilungen für Malerei*, Volume XXIV, number 18, München, 15 March 1908, pp. 162-163. Reprint, courtesy Dr. Johann Koller, DoernerInstitut, Munich.

¹⁶³ Doerner 1934, p. 93 and 94.

¹⁶⁴ The journal which was renamed several times was called, in chronological order: *Technische Mitteilungen für Malerei* (c. 1884-1842), *Deutsche Zeitschrift für Maltechnik* (during World War II), *Maltechnik* (after World War II), *Maltechnik/Restauro* and *Restauro*. It changed its typeface and format to more closely resemble *Technical Studies in the Field of the Fine Arts* in 1942. According to conservator Koller it was not until after the second world war, when Kurt Wehlte was editor of the journal that the publication began to be interested in modern media. Wehlte authored a compendious textbook on painting materials which was translated into English in 1975. Wehlte, Kurt. (Ursus Dix, trans.). *The Materials and Techniques of Painting*. New York: Van Nostrand Reinhold, 1975 (of 1967 German original). Conversation with Dr. Johann Koller by Jan Marontate, DoernerInstitut, Munich, July 7, 1994.

and techniques was followed closely in North America until at least the 1930s given its presence in library and archival collections. For example, one of the relatively few widely-distributed American authors of artists' handbooks in the early twentieth century, paintmaker F.W. Weber, had copies of the journal published by the German society dating from the late 1890s.¹⁶⁵

Doerner appears to have been by far the most widely-read of the German Society's members, at least by artists and paintmakers. A handbook by Doerner which appeared in English translation in 1934 was frequently mentioned in interviews and oral history accounts as a source of information about paintmaking and about art techniques. Some of the pioneers in synthetic paintmaking recalled using the earlier German edition when they first began to make artists' colours.¹⁶⁶

Doerner was an artist by training with little formal education in chemistry. He had studied painting at the Munich Academy of Fine Arts and had worked as a landscape and portrait artist.¹⁶⁷ In 1910 he joined the German Society for Rational Painting Methods and he soon made a name for himself as a crusader for improving the techniques of living painters and art conservators. He became an professor of painting techniques at the Munich Academy where he undertook research on past and current techniques in collaboration with both academic and industrial chemists.¹⁶⁸ Doerner had

¹⁶⁵. "F. Weber and Company, Inc. Collection, 1870-1967", preliminary catalogue of the collection, January 18, 1995, unpublished typescript, Getty Conservation Institute, Santa Monica, California, p. 6. Weber also lectured at the Art Students League in New York and the Pennsylvania Academy of Fine Arts in Philadelphia. Weber, F.W. *Artists' Pigments. Their Chemical and Physical Properties*, New York: Van Nostrand, 1923.

¹⁶⁶. Bocour, Golden, and Levison all referred to Doerner's book. Doerner, Max. *The Materials of the Artist and their Use in Painting with Notes of the Techniques of the Old Masters*. (Neuhaus, E. trans.), New York: Harcourt, Brace, and World. 1962 (reprinting of 1934 translation). The first German edition appeared in 1921. By 1939 the book was internationally known, and translations had been published in England, the U.S., Poland and Japan.

¹⁶⁷. Czerny, Siegfried. "Professor Max Doerner". *Technische Mitteilungen für Malerei. Zeitschrift der "Deutschen Gesellschaft für rationelle Malverfahren" e.v. in München (Adolf-Wilhelm-Keim-Gesellschaft)*. Volume 55, Munich: Georg D.W. Callway, pp. 34-38. Reprint courtesy Dr. Johann Koller, conservation scientist, Doerner-Institut, Bayerische Staatsgemäldesammlungen, Munich.

¹⁶⁸. One of his collaborators was the chemist, Hans Wolf, who was an employee of I.G. Farben, a

a well-publicized conflict with government-funded restorers about practices which he insisted were detrimental but he eventually became an important figure in German restoration as well due in large part to political changes in the organization of restoration in the 1930s. Nonetheless his research had a mixed reception among chemists and conservators, both in North America and in Germany. Critics of his book pointed to insufficient treatment of historical methods and a lack of scientific evidence in support of Doerner's claims.¹⁶⁹ Under the Third Reich, the Arts Council Administration (*Verwaltungsbeirat der Reichskunstkammer*) founded an institute for painting technique in charge of conservation, restoration and testing art materials which was named after Doerner, led by him and installed in a prestigious new building in Munich shortly before his death.¹⁷⁰ In his last years Doerner was working on colour testing for the formulation of a law about artists' colours. His handbook for artists continued to be revised after his death.

Doerner's impact is difficult to estimate in part due to strong anti-German sentiments in North America which may have contributed to the suppression of references to his and other German contributions to the study of art materials and techniques during and after the war for ideological reasons.¹⁷¹ Indeed it is surprising that his work was mentioned so frequently given the historical context. Yet his handbook was an extremely popular best-seller in spite of its critical reception by conservation scientists. It appeared in American bookstores just as the New Deal art

chemical manufacturing company which became notorious for its collaboration with the Nazis.

¹⁶⁹. Sonnenburg, Hubertus von. *Max Doerner's (1870-1939) opvattingen over historische schildertechnieken in het licht van hedendaagse inzichten*. n.p., n.d. p. 7. Typescript. Courtesy Johann Koller, DoernerInstitut, Munich.

¹⁷⁰. The DoernerInstitut was located in the *Haus der Deutschen Kunst* in 1938.

¹⁷¹. We have noted earlier the neglect of German research on conservation in accounts of the history of scientific conservation by Gettens for example. There were some justifications for suspicions about Doerner's possible anti-semitism based on accounts of his dispute about book royalties with a Jewish editor, and the fact that for a time the DoernerInstitut was located in a house taken from a Jewish citizen who had fled the Nazis and had stolen works of art in its possession.

projects began to stimulate broad-based demand for information about art techniques and was still mentioned in art magazines as a standard reference work for artists in the 1960s.

Increased Demand for Information about Art Making: Highbrow and Middlebrow Tastes

During the 1930s and early 1940s, research on art techniques and materials was conducted to develop guidelines and products for use by professional artists, in crafts projects and in art education in the government-funded New Deal art projects. At this same time there was a gradual increase in the coverage of art techniques and materials in widely-available national art magazines. In the two decades following the war in the U.S. there was a veritable explosion of "how-to" books and magazine articles on art techniques. Some of these publications began to incorporate "scientific" approaches to new technology while appealing as well to the burgeoning interest in art in America.

By the end of World War II middle-class collectors, neophyte connoisseurs, art students who had delayed their studies because of the war, and other aspiring artists swelled the ranks of art lovers, and created a demand for information about art and how to make it. The impact of middle-class involvement in art was debated by critics, art patrons and artists even at the time.¹⁷² Some lamented the tastes and lack of knowledge of this new group of art buyers, while others saw the broadened base of support for the arts as a symbol of the vitality of post-war culture in North America. Whether this movement towards appropriation of art by middle-class Americans could be considered "democratization" is debatable, since the boundaries between an elite tastes of connoisseurs capable of recognizing and appreciating the avant-garde and the

¹⁷². See for example the debate between artists Stuart Davis (former head of the Artists Congress) and George Biddle (New Deal arts administrator) in June-December 1943. Biddle, G. "The Victory and Defeat of Modernism: Art in the New World", *Harper's*, 187, June 1943, pp. 32-37 and Davis, S. "What About Modern Art and Democracy?", *Harper's*, 188, December 1943, p. 37.

middlebrow or lowbrow tastes of newcomers continually shifted, keeping status distinctions alive.¹⁷³

Interest in techniques of execution had been associated with lack of erudition and "low-brow" or "middle-brow" tastes in Europe, the implication being that an obsession with fabrication was the mark of a manual laborer or working class mentality.¹⁷⁴ Yet discussions of art techniques and materials in North America were also undertaken in avant-garde circles by influential artists (like the Mexican muralists and the surrealists) and by critics (notably Clement Greenberg). In the late 1940s and early 1950s modern art in America, particularly abstract expressionism (and later post-painterly abstraction) challenged received notions about technique and representation. It stimulated widespread discussion about meaning which often included heated debate about art-making techniques. In New York School paintings in particular the act of painting came to be seen as expression of the psyche of living artist-visionaries, like Jackson Pollock who (like Picasso before him) was filmed in the act of painting on glass to give viewers a more intimate view of his creative process.¹⁷⁵ A new paradigm of the artist-visionary had emerged to replace the workmanlike comrade-emancipator of the New Deal art projects. The mass press obliged its readers with details of the studio practices of

¹⁷³ DiMaggio has shown how in the performing arts the re-classification of opera, little theater and the dance within high culture canons served to legitimate the status of certain interest groups while maintaining inequalities. Levine has discussed the emergence of highbrow and lowbrow taste cultures in the context of literature in America. DiMaggio, Paul. "Cultural Boundaries and Structural Change: The Extension of the High Culture Model to Theater, Opera, and the Dance, 1900-1940", in Lamont, Michele and Fournier, Marcel (editors). *Cultivating Differences. Symbolic Boundaries and the Making of Inequalities*, Chicago: University of Chicago Press, 1992, pp. 21-57; and Levine, Lawrence. *Highbrow/ Lowbrow: The Emergence of Cultural Hierarchy in America*. Cambridge, Mass.: Harvard University Press, 1988

¹⁷⁴ In studies of the reception of works of art Akrich and Heinich have both used the art-viewing public's interest in technique as an almost comical manifestation of their lack of knowledge or understanding of aesthetic issues, and a mark of low status. Akrich 1986 p.273-4; and Heinich, Nathalie. "Errance, Croyance et Mécréance: Le public du Pont-Neuf de Christo", *L'écrit-voir. Revue d'histoire des arts*, numéro 11, 1988, pp.3-18.

¹⁷⁵ Photographer Hans Namuth produced hundreds of photographs of the painter at work as well in 1950. The pictures were published in the popular press, in mass magazines like *Art News*.

famous and not-so-famous artists, proffering intimate insights. "Experts" provided an initiation into the secrets of the Old Masters and to the studio practices of living visionaries.

National American Mass-Circulation Art Magazines and Coverage of Art Technique

Large-circulation national art magazines provide clues about studio practices both new and conventional.¹⁷⁶ They constitute a major forum for the diffusion of information about new products, though not all nationally-distributed art magazine carried much information about materials and techniques.¹⁷⁷ As previously suggested, it is likely that some of the technical material in these art magazines in the 1930s and early 1940s represented state-of-the art information about very recent innovations used in New Deal art projects since so many artists and paintmakers were involved with the projects.¹⁷⁸ Yet, none of the articles published in the 1930s which have been located to date give details on synthetic paints.¹⁷⁹ In the 1940s the coverage of techniques intensified with the inception of technical advice columns, but little detailed information appears about synthetic painting media until the 1950s, and there was not much press coverage of acrylic paints for artists until the 1960s.

¹⁷⁶. In this section technical coverage will be considered primarily from four magazines which did at least carry advertisements about art supplies: *The Magazine of Art*, *Art Digest*, *Art News* and *American Artist*.

¹⁷⁷. Indeed in interviews some early users of synthetic painting media, like Claude Tousignant and Yves Gaucher, mentioned having learned about the new materials by reading American art magazines. Interviews with Claude Tousignant and Yves Gaucher by Jan Marontate. April 1993.

¹⁷⁸. There are noteworthy circumstantial connections between information appearing in the magazines and information missing from New Deal records in the National Archives. As noted in our discussion of the New Deal art projects, much of the technical information generated during the projects (such as recipes and step-by-step instructions on techniques) appears to have been discarded by information management specialists.

¹⁷⁹. Regarding painting materials, several articles appeared do give formulas or detailed instructions on traditional fresco, tempera and casein painting, and recipes for the Maroger Medium for oil painting developed by an expatriate French conservator Jacques Maroger. Some also mention the use of industrial paints. Kirstein for example describes Siqueiros' use of synthetic automotive lacquers. Kirstein, Lincoln. "Siqueiros: Painter and Revolutionary", *Magazine of Art*, Volume XXXVII, January 1944, pp. 22-27, 34.

Discourse on techniques and materials emerged gradually, couched in broader rhetoric about cultural trends. Sometimes the connections were made through simple juxtaposition of themes. For example, an early series of feature articles in the *Magazine of Art* on the topic of fine art techniques, called "Tools and Materials", appeared following a review in the same magazine of Louis Mumford's book *Technics and Civilization* which discussed the sociological and historical dimensions of instrumental knowledge in the cultural context.¹⁸⁰

Often authors expressed enthusiasm for modernism as the driving force in technological innovation in the arts. For example, the *Magazine of Art*, published monthly by the American Federation of Arts, which had little coverage related to any technical matters at all before the mid-1930s,¹⁸¹ gradually began to include articles extolling the virtues of new media (at first in the area of design rather than fine art).¹⁸² In 1932, a reviewer of a show of contemporary American industrial art championed synthetic media:

"In this day of invention, of chemical magic, of breath-taking mechanical advance, science and technology have added immeasurably to the resources of design. Not only have tools themselves achieved an uncanny automatism in the forms of power-driven machinery, but in the laboratory synthetic chemistry has made, indeed created, new materials with new and unbelievable qualities, to

¹⁸⁰. The series which appeared sporadically in the *Magazine of Art* for several years beginning in December 1934 did not touch upon synthetic media but is emblematic of a change in attitude toward technique. The articles in the series treated primarily printmaking techniques (offset, woodcut, various etching techniques, lithography), sculpture (clay modeling, ceramics, and carving), gouache and watercolour painting.

¹⁸¹. The American Federation of the Arts also produced an annual publication called the *American Art Annual* which included a list of advertisers in the magazine classified according to their products. In 1934, art materials manufacturers began to be listed in a "Buyer's Guide" section of the annual publication which ceased appearing in 1948, before any ads were placed for synthetic artists' paints.

¹⁸². In 1930 the magazine had no advertisements for art materials. By 1934 the magazine was carrying advertisements which became increasingly elaborate. In one advertising campaign the paintmaker Grumbacher ran a series of photos of different painters at work each month with a short biographical sketch and an endorsement of Grumbacher paints. The magazine ceased publication in 1953, too soon to be a major source of specific information about proprietary brands of synthetic paints for artists but was an important early trendsetter in its coverage of materials. (Note between 1909 and 1915 the magazine was called *Art and Progress*. It was named the *American Magazine of Art* in 1915-1937.)

offer the designer always fresh opportunities to express the needs of today in the products of today.

These synthetic materials are like territory unexplored and the study of their potentialities has been a venture into a rich but unknown land."¹⁸³

Another venerable art magazine dating from the turn of the century, *Art News*, published little information specifically about art materials until mid-century, but its extensive coverage of art exhibitions makes it an occasional source of news on techniques in vogue. Writing about what has been touted as the earliest show of synthetic media for easel paintings in the U.S. a reviewer stated that an exhibition by Lue Osborne at the Delphic Studios constituted:

"the first one man show of canvases executed in a new medium: synthetic resins. The artist and her husband Cordray Simmons have worked together in an attempt to find a material for painting which would be durable, clear and unaffected by light."¹⁸⁴

A different current in discourse about the appropriation of new media in the arts was overtly linked with efforts to capitalize on an emerging broad-based audience of art educators, students and hobbyists. The magazine *American Artist*, a leading proponent of popularization, gave much attention to techniques as a means of access to art.¹⁸⁵ From its inception, the magazine showed an eagerness to explore new trends but was geared to popular tastes and had less coverage of elite art scenes than the other major national art magazines.¹⁸⁶ It was particularly conservative regarding abstract art, with

¹⁸³. Bach, Richard F. "Materials Achieve New Values", *Magazine of Art*, Volume XXIV, April 1932, pp. 271-274.

¹⁸⁴. Of course this claim of priority is doubtful given the large number of students and disciples of Siqueiros experimenting with new media beginning in the early 1930s. D.B. "A Successful Practitioner in a New Medium: Lue Osborne", *The Art News*, June 10, 1939. Lodge discusses claims by Osborne and Simmons that their innovative use of new media was the first and that it had been overlooked. Lodge, 1989.

¹⁸⁵. It was first called *Art Instruction*. A monthly magazine of practical instruction for artists and students. *Art Instruction*, published from April 1937 until December 1938, was followed by *American Artist* which does not appear to have been widely distributed until Volume 4, Number 1 in 1940. It was founded by Ernest W. Watson and Arthur L. Guptill, at a time when the New Deal art projects began to seriously explore technical issues in painting. Watson and Guptill soon became well-known publishers of an extensive series of artists' handbooks.

¹⁸⁶. It favored pieces on local artists in creative settings, painting murals for schools, doing portraits and landscapes, often in modest rural, small town or suburban settings. In a single issue there were

an editorial policy which strongly supported various forms of realism. Despite its "low-brow" and conservative tendencies *American Artist* managed to maintain a large and varied readership, in part due to coverage of art schools, employment opportunities for art instructors, calls for submission to exhibitions, and possibly as well because of its extensive coverage of a wide range of technical information.¹⁸⁷

Since experimentation with synthetic media was at first undertaken by a relatively small coterie of avant-garde artists and because the new media were associated with abstract painting, *American Artist* was slow to provide extensive coverage of the synthetic paints although it did carry brief references to them in the 1940s. For example in 1941, Herbert E. Martini wrote a series of short articles on tempera painting.¹⁸⁸ Martini was an artist, a paintmaker and a member of the Standing Committee of the Recommended Commercial Standard for Artists' Oil Paints.¹⁸⁹ Although he emphasized historical techniques, Martini suggested using modern materials with traditional ones.¹⁹⁰

More references to the use of synthetic media in painting began appearing in the 1950s, particularly in profiles of artists. These writings offer insights into how technical

often several articles on "technic" as it was called in the magazine in the first few years, among them, four continuing series on painting and sketching techniques: "Art Instruction Sketchbook", "Arthur's Round Table," "Media and Methods", and "Technical Hints from Artists' Studios." In 1938 there was also a year-long series by Mylo Martelli called "Tools and Materials of the Painter's Craft" but none of the articles treated synthetic media. In 1942, there was a three-part series devoted to the theme of "plastics in art", which however focussed on techniques for producing three-dimensional objects, not on the use of plastics in paintings. This was a topic which had been explored by the Handicraft Laboratory of the WPA in Washington D.C. and by the New York Design Laboratory a few years earlier. Mortellito, Domenico. "Industry's Challenge to the Artist (3 parts)", *American Artist*, Volume 6, January 1942, pp. 10-11, 27, 30; February 1942, pp. 26-28; and April 1942, pp. 32-34.

¹⁸⁷. Kent, Norman. "Editorial: You Have Been Counted", *American Artist*, September, 1968, p. 5.

¹⁸⁸. The five-part series treated the following themes: "Historical Background" (January, p. 21), "Chemistry and Physics of Tempera Emulsions" (February, p. 28-29), "Preparation of typical Tempera Painting" (March, p. 26, 33), "Suitable Surfaces for Tempera Painting" (April, p. 11, 29), and "Glazing with Oil over Tempera Underpainting" (May, p. 30-33). *American Artist*, Volume 5, 1941.

¹⁸⁹. His company was Martini Artists Color Laboratories, 10-15 43rd. Ave., Long Island City, N.Y. *Artists' Oil Paints, Commercial Standard CS98-42*, National Bureau of Standards, U.S. Department of Commerce, 1942, p. 10.

¹⁹⁰. In fact the new media were only mentioned in passing. The author recommended the use of "nitrocellulose or synthetic resin" as a varnish to protect gum arabic emulsions. Martini also presents casein tempera, which began to enjoy a revival at about this time.

innovation was imbedded in artistic discourse. One of the earliest articles which mentioned synthetic painting media appeared in 1952 and discussed Karl Zerbe's use of a water-borne synthetic paint formula developed by one of his students at the Boston Museum School.¹⁹¹ Zerbe's innovative use of polymers is portrayed as an expressionistic liberation from old habits which reiterates themes from his dramatic personal history.¹⁹²

After an emotional description of Zerbe working on a painting the author concludes:
 "the general impression was one of complexity and quandary. Yet you felt a new philosophic depth for this very reason. Questions seemed to arise which had never obtruded themselves before. If there was no loss of facility, there was an abandonment of an old facile view. The concentration was just on . . . a new language which carried a new meaning."¹⁹³

The idea that a new medium is suited to the expression of new ideas echoes reflexions by Siqueiros twenty years earlier, yet it was still considered part of avant-garde discourse about painting in the 1950s as testimony by painters in later sections will illustrate.

The magazines were fairly slow in covering use of the new media in their longer articles however.¹⁹⁴ One of the earliest surveys treating new paint materials was published by *Art News* in 1952.¹⁹⁵ In rather dry, "factual" exposition (which was positive in tone) it covered changing artistic practices including among its sources

¹⁹¹. Zerbe, who had trained as a chemist and had studied art in Munich demonstrated the use of a polyvinyl acetate formula developed by Alfred Duca. Duca called his paint "polymer tempera". Wight, Frederick. "Zerbe Paints a Picture", *Art News*, Volume 51, 1952 pp.26-29, 53-54. See also, Chaet, B. "P.V.A. Emulsion Tempera— Alfred Duca", *Artists at Work*, Cambridge, Mass.: Webb Books, 1960, pp. 31-36

¹⁹². He spent his youth in Paris, then studied art in Munich where he won a prize which allowed him to travel to Italy.

¹⁹³. Wight 1952, p. 54.

¹⁹⁴. *Arts* was the earliest, carrying interviews with artists about innovative use of new materials notably in the series "Studio Talk" by Vincent Longo and later Bernard Chaet which is discussed below. Not until the 1960s did *American Artist* begin to regularly include mention of the new media in the context of Ralph Mayer's advice column. The earliest feature article in *Art News* on an artist using a proprietary brand of acrylic paints we have located did not appear until 1966. It showed Boston Color School painter Gene Davis using the acrylic resin paint Magna. Nordland, Gerald. "Gene Davis Paints a Picture", *Art News*, Volume 65, April 1966, pp. 46-49, 61-62

¹⁹⁵. It treated both modern media and the rediscovery of the "lost formulas of the masters". Seckler, Dorothy Gees. "Changing means to new ends: Surveying the Enormous Range of New Materials Developed by Artists and Scientists in Painting in the Last Fifty Years", *Art News*, Summer 1952, pp. 67-69, 89-91.

interviews with art professors and manufacturers who pointed to recent developments in the use of synthetic resins in painting, and concluding with an assessment of the conservation issues raised by the new media.¹⁹⁶

Several of the magazines carried a regular anonymous column with news about tools and materials in the form of short press releases.¹⁹⁷ In *Art Digest* the column sometimes departed from this format to feature a short article on materials or techniques. For example, in 1954 it treated new developments in "plastic painters' materials", discussing types and characteristic of the new media and mentioning leading manufacturers in the "plastics field".¹⁹⁸ The column was not always up to date on the latest products though. It did not publish news releases on Bocour's acrylic resin paint Magna and Levison's water-borne acrylics Liquitex until 1957, several years after both paintmakers had introduced their respective products.¹⁹⁹ In 1959 an article on varnishes also covered new synthetic varnishes and another gave tips about what kinds of media and brushes to use with the new water-borne acrylics.²⁰⁰ Modeling pastes, extenders and other brands were not featured until the 1960s.

¹⁹⁶. A list of the companies and the innovations in materials their representatives mentioned follows: Devoe and Raynolds (nitrocellulose lacquer), Winsor and Newton (synthetic pigment), Grumbacher (synthetic pigment), Dorland (synthetic wax medium for encaustic), Torche (synthetic wax medium), Nobema (paints for use on glass), and C. Robertson (none, rejection of modern "stunts"). Several of these products were covered in the "New Sources, New Materials" column in November 1952. Researcher Charles Seide and conservator Sheldon Keck of the Brooklyn Museum were also interviewed. Seide later founded a paintmaking company called Museum Art Supplies.

¹⁹⁷. In *Art News* the column head was "New Sources, New Materials". In *Art Digest* there were two regular columns, "Artists Bazaar" and "Artists' Materials Briefs" featuring notes on recent announcements from manufacturers or representatives of new materials and tools for the artists. In *American Artist* the comparable column was called "The Art Mart". Beginning in January 1956, *American Artist* also began publishing an annual "Buyer's Guide", listing suppliers for art-making tools and materials.

¹⁹⁸. The article distinguished between four "types" of plastic: acrylic, vinyl, alkyd and styrene. It mentioned the following companies: Bocour (makers of Magna), C.V.H. Laboratories (makers of a thick tube color for heavy relief work) and Museum Art Supplies (makers of various plastic binders, emulsions and "a highly recommended ground called "Quick-On Gesso"). "New Sources, New Materials", *Art News*, Volume 53, March 1954.

¹⁹⁹. "New Sources, New Materials", *Art News*, Volume 56, April 1957, p. 71.

²⁰⁰. "New Sources, New Materials", *Art News*, Volume 58, October 1959, p. 67

In spite of the occasional reference to uses of synthetic materials in art, little detailed discussion of synthetic painting media occurred before the mid-1950s, when advice columnists and writers of technical series began to write about the appropriation of the new media in painting. This was two decades after avant-garde painters like Siqueiros and Pollock had started experimenting with synthetic materials. Major articles about the use of proprietary synthetic paints made specifically for artists do not appear until the 1960s. Even as late as the mid-1960s, water-borne acrylic paints for artists which had been in existence for a decade (and which had been advertised in the magazines for years) were just being introduced to readerships, often in connection with discussions of well-known artists who used them.²⁰¹ Finally in 1974 *American Artist* magazine devoted an entire issue to water-borne acrylic paints with articles clearly intended for hobbyists and students on types of plastics, safety measures, various ways to paint with synthetic media and specific step-to-step instructions for projects.²⁰²

Advertisements placed by paintmakers are slightly more timely in their listing of new products. Yet there is a considerable lag between the dates manufacturers began to make synthetic painting media and the dates advertisements for them appear, even though the same manufacturers were advertising their traditional products in the magazines already.²⁰³ One possible reason for the delay in placing advertisements about

201. Taylor mentions six manufacturers of acrylic paint, listing well-known artists who used them. Taylor, Brie. "Towards a Plastic Revolution." *Art News*. Volume 63, March 1964, pp. 46-49; Betts, Edward. "Painting in Polymer and Mixed Media", *American Artist*, Volume 28: 8, Issue 278, October 1964, pp. 34-39; Gross, Earl. "Earl Gross Discusses Polymer Color in Depth", *American Artist*, Volume 31: 5, May 1967, pp. 28, 62-63, 68; Tobias, Abraham Joel. "A Mural Painting for Science and Technology", *American Artist*, March 1969, pp. 46-52

202. "Special Issue: Acrylics", *American Artist*, Volume 38, June 1974.

203. For example the earliest advertisement located for the oil-compatible acrylic resin paint Magna made by Len Bocour and Sam Golden ran five years after the 1948 date commonly accepted for their first production. *American Artist*, March 1953, p. 1; and *Arts Digest*, March 1953, p. 68. Similarly the first ads located for Liquitex water-borne acrylic paints, produced by Henry Levison's Permanent Pigments appeared in 1958, over three years after the date given for full production of the line by the company. "American Artist 3rd Annual Buyer's Guide of Selected Art and Craft Materials", *American Artist*, January 1958, separate pagination from magazine, p. 11.

the new media is that paintmakers did not wish to invest in advertisements until they were reasonably sure of their ability to produce reliable products in sufficient quantity. Another might be a hesitancy to invest or to risk the company image on synthetic media without pre-testing the reception by artists.

Representations of synthetic media vary in the advertisements, giving an indication that there was some uncertainty about how to present the new media. Indeed paintmaker Len Bocour commented on the "image" problem of acrylic paints. After an initial campaign stressing the novelty of his acrylic paints Bocour decided that calling them "plastic" was "the kiss of death" as far as sales were concerned.²⁰⁴ Thereafter he began to place the paints in the historical tradition of great art innovations and touted Magna paints as "the first new painting medium in 500 years" referring to the legendary discovery of oil painting by contemporaries of Van Eyck during the Northern Renaissance. Permanent Pigments' early advertisements for Liquitex water-borne acrylics were coldly unmetaphoric, providing crisp, direct promises of good technical performance.²⁰⁵ Later in the 1960s as the number of manufacturers grew the range of approaches expanded with counter-culture themes, endorsements by artists and dramatic colourful artwork.

Thus coverage of the new media in magazines was spotty. In particular, feature articles, news releases and advertisements did not address various points of contention regarding the adoption of the new media by painters. The most heated discourse appeared instead in technical advice columns in the same magazines.

²⁰⁴. Bocour 1985, p. 9.

²⁰⁵. The listing read as follows "Permanent Pigments Liquitex Artists' Colors. Acrylic-base line of artists' colors, varnishes, mediums, modeling (impasto) paste, gesso, cleaner. alkali compatible pigments for murals, concrete walls, easel painting: transparent, ready to use, durable, dry quickly." "American Artist 3rd Annual Buyer's Guide of Selected Art and Craft Materials", *American Artist*, January 1958, separate pagination from magazine, p. 11.

Technical Advice Columns in Art Magazines: Ralph Mayer, Frederic Taubes and Other Figures in Debates about New Painting Media in the 1950s

Magazine articles about technique and materials sometimes appeared in the form of series or technical advice columns, in which authors answered readers' queries.

Regular writers of these columns on technical matters were presented as prominent authority figures by the magazine editors. These columnists participated actively in the diffusion of information about techniques but several were decidedly cool towards synthetic media and new ways. Their articles about the new media provided an unusual point of contact between artists, conservators and manufacturers who came into contact with the writers.

In particular, four columnists wrote about techniques in widely-read national art magazines during the 1950s when synthetic paints for artists were being introduced. They were Frederic Taubes, Ralph Mayer, Bernard Chaet and Vincent Longo. All described themselves as artists, and all had taught art classes.²⁰⁶ Mayer and Taubes were also already authors of books about art techniques when they became magazine writers. Mayer worked as a restorer, a consultant on scientific questions applied to art, he conducted technical research and was an active participant in the development of standards for art materials. Taubes developed formulas for new painting materials which he promoted actively.

Frederic Taubes' long-running technical column was known as "Taubes' Page", and ran from 1943 to 1961. It often focussed on so-called "studio secrets" but gave little attention to new media or innovative techniques.²⁰⁷ Taubes was an artist, teacher and

²⁰⁶ Chaet and Longo were full-time university art professors at Yale's School of Fine Art and Bennington College in Vermont respectively. Taubes taught non-credit studio art regularly particularly in his later years when he taught courses at vacation spots in Mexico and New Mexico. Mayer taught private classes and occasional courses on technique at the Art Students' League, Columbia University, New School for Social Research, Parson School of Design and Silvermine College of Art.

²⁰⁷ Occasionally he discussed more general issues, like the use of slang expressions. For example, in his article on a vogue for the use of the word "plastic" in art he only treats metaphoric uses of the term, not new materials. Taubes, Frederic. "Taubes' Page: Have You Got Plastic Significance, Brother?". *American Artist*, Volume 10, June 1946, p. 32.

writer who established himself as minor authority on art technique on the basis of a rather brief formal education. Taubes spent his early years in Eastern Europe and Germany endeavoring to avoid repressive military and political regimes.²⁰⁸ He claimed to have studied for about a year in the Academy of Fine Arts in Munich under Max Doerner. Taubes quit the Academy after about a year to study with the renowned colourist and modernist Johannes Itten at the Bauhaus, an academy for nonobjective art then located in Weimar. He does not appear to have graduated from any institution of higher learning. In 1933 he moved permanently to the United States where he made a living as an artist and writer. His first book, *The Technique of Oil Painting*, was published in 1941 and presented the techniques of the Old Masters which he claimed to have learned from Max Doerner. Taubes was a prolific author, claiming to have published over 40 books. By his account, he came to the attention of the editors of *American Artist* magazine because of the success of his popular 1942 book criticizing modern art called *You Don't Know What You Like*..

Taubes' column did not advocate modern materials and techniques, but instead promoted his own version of "traditional" techniques. Although he was initially suspicious of synthetic media, he eventually authored a manual on acrylic techniques when the popularity of the media was well-established.²⁰⁹ Taubes' name was also known to artists because he developed the basic recipes for commercially-available painting products : "Taubes' Copal Painting Medium" and "Taubes' Copal Varnish" which he claimed recreated formulas of the Old Masters.²¹⁰

²⁰⁸. Born in 1900 in Poland he moved with his family to Austria after the 1914 Russian siege of the city. His family lived in Austria and Germany and he travelled in the Balkans before immigrating to the U.S. in the 1930s. Cummings, Paul. *A Dictionary of Contemporary American Artists*. St. Martin's Press: New York, 1966, p. 286; Hines, Diane Casella. "Frederic Taubes. A Retrospective". *American Artist*, Volume 38, Issue 384, July 1974, pp. 30-35, 65-66; and Watson, Ernest W. "Taubes: An Interview". *American Artist*, Volume 7, January 1943, pp. 14-20.

²⁰⁹. Taubes, F. *Acrylic Painting for the Beginner*, Watson-Guption: New York, 1971, 144 p.

²¹⁰. In conducting the research for his first book, Taubes apparently began to work on the idea of using a common hard resin, like "Congo Copal" from the Belgian Congo, instead of a soft one, for varnishes

Ralph Mayer (1895-1979) another well-known technical authority, also wrote advice columns for many years.²¹¹ Mayer studied chemical engineering at Rensselaer Polytechnic Institute, taking a special course in industrial paint technology. Mayer's early education in applied science had been governed by the idea that he would join the paint manufacturing firm of his uncle, Maximilian Toch, who funded his studies.²¹² His uncle was a very successful businessman with strongly developed interests in both art and science. Toch was a prominent international authority on industrial coatings, a professor of industrial chemistry at the Cooper Union (a New York City school known for its strong design program), an amateur photographer, art conservator and a prolific author of technical texts related to paint.²¹³ After military service, Mayer worked for his

for oil paintings. He claims to have based this analysis on the characteristics of Old Master varnishes. But in order for a resin like Congo copal to be used it would have to be dissolved in a solvent like mineral spirits, which were thought to have been developed later. Research conducted by Paul Coremans, director of the *Laboratoire Central des Musées de Belgique*, working on a restoration of van Eyck's Ghent Altarpiece apparently established an earlier date for turpentine (mid-1300s). Taubes consulted with Coremans in 1952 on his idea about hard resins and published his findings concerning hard resins and the painting mediums of the masters in *The Mastery of Oil Painting*, in 1953. Copal varnish and painting medium based on Taubes' formulas were manufactured by Henry Levison's company Permanent Pigments.

²¹¹ First called *The Art Digest*. *The News Magazine of Art* when it began to appear in 1926, it was renamed *Arts Digest*, in 1954, became *The Arts* in 1955-56 and then *Arts Magazine*.

²¹² The papers of Ralph and his wife Bena Mayer were donated to several institutions and then withdrawn apparently because of disagreements related to Mrs. Mayers' demands. Some materials were given to the Archives of American Art (and are still in storage there) where microfilms were also prepared of papers later taken elsewhere. Subsequently arrangements were made to give them to the University of Delaware, then the Art Students' League and finally Yale University where they now are held. Delaware conservation professor Hilton Brown wrote an monograph on Mayer for an exhibition related to the donation there (prior to its retraction). The Ralph Mayer Center for Artists' Techniques at the University of Delaware was short lived. Brown, Hilton, *Ralph Mayer. On the Material Side. The Art and Archives of Ralph Mayer*. Exhibition Catalogue. University Gallery, University of Delaware. April 29-May 26, 1984; Brown, Hilton. "On the Material Side—Ralph Mayer's Contribution to Our Understanding of the Technology of Art" (Part 1 and 2), *American Institute for Conservation of Historic and Artistic Works. Preprints*. 11th Annual Meeting, May 1983, pp. 8-16; and 12th Annual Meeting, May 1984, pp. 11-19.

²¹³ Toch later became Professor of the Chemistry of Artists painting at the National Academy of Design. Toch published numerous books on both industrial and artists' paints. Brown suggests that Mayer's collaboration to his uncle's research may not have been fully acknowledged. The 1925 edition of Toch's book on paint technology acknowledges Mayer's assistance. Brown 1984, pp.9-11, 31. Toch, Maximilian. *How to Paint Permanent Pictures*. New York: Van Nostrand, 1922; Toch, Maximilian. *The Chemistry and Technology of Paints*, 3rd Edition. New York: Van Nostrand, 1925.

uncles in the Toch Brothers' firm for ten years learning about the manufacture of coatings and chemicals used in paint and varnishes.

Mayer's involvement with art developed relatively late. When he was almost thirty years old, in 1926, he began to study painting at the Art Students' League and decided to become an artist. Mayer quit his job in his uncle's firm and tried various ways of making a living using his knowledge of chemistry in applications related to the arts (such as helping his brother set up an artists' paintmaking business and working as an "artist-chemist consultant").²¹⁴ He also tried to develop formulas for using synthetic media in the arts, notably for a subway art project.²¹⁵ During the 1930s his principal source of income came from art restoration projects and he started writing articles about the care of paintings.²¹⁶ He also taught private classes on art techniques and was invited to lecture at established art institutions.²¹⁷ In 1939 he became involved with the development of recommended standards for artists' materials after reading about it in an art magazine.²¹⁸

Mayer's *magnum opus* was *The Artist's Handbook of Materials and Techniques*,

²¹⁴. At first he advised manufacturers on chemical problems (for example related to etching processes). In 1930 Mayer and his younger brother Herbert set up the Durex Art Company at E. 15th Street, only a few blocks from where Len Bocour's started making paints in 1932. He used this description of his occupation in a by-line for an article he wrote on moving and storage of art. Brown 1984, p. 13. Mayer, Ralph. "Handle with Care", *The Furniture Warehouseman*, 1939, pp. 9-10. clipping from Ralph Mayer Papers, AAA, reel D212.

²¹⁵. He conducted research on the use of ethyl silicate and other silicon esters in mural painting and art conservation. He also developed a formula for silk-screen printing. See for details "Silicon Esters, 1932-1951" Mayer Papers, AAA, microfilm especially reel D212: 1095-1506.

²¹⁶. "Correspondence and Records Relating to Mayer's Conservation and Restoration of Paintings". Mayer Papers, AAA, reel D212.

²¹⁷. He gave a series of five lectures on the chemistry and technology of tempera painting at the Art Students League in 1931. The Mayers were interviewed on their reminiscences of experiences during the Depression and the New Deal. Interview with Bena and Ralph Mayer by Harlan Phillips. AAA, 1964, 63 page transcript.

²¹⁸. Mayer wrote to Gettens after reading about his work with Sterner on the development of an standard for artists' paints. Mayer and Gettens corresponded until Gettens' death in 1974. See Mayer Papers, AAA, reels D2111 and D213; and "Ralph Mayer Folders (2)". Gettens Archives, Freer Gallery of Art, Smithsonian Institution. The article Mayer read was: Sterner, Frank W. and Rutherford J. Gettens, "A Standard for Artists' Materials", *Magazine of Art*, Vol. 32, No. 9, September 1938, pp. 518-520.

first published in 1940, then reprinted and revised three times by Mayer.²¹⁹ This text cemented his reputation as an expert on art materials. He joined the faculty of Columbia University (as a part-time lecturer) and became almost a celebrity, invited to speak across the nation. Many artists sought his advice on technical matters and he began charging a fee for his services.²²⁰ He later set up a non-profit research center called the Artists Technical Research Institute.²²¹

Mayer's career as a columnist began with thematic articles in *Arts Digest*. Response was overwhelming and he eventually devoted much space to answering questions from readers. In his monthly column "On the Material Side" (from 1949 to 1954) Mayer promoted "the study of the materials and methods for rational painting techniques". He resumed writing for *American Artist* in 1962 (after Taubes ceased to write his regular column for that magazines). In his "Technical Page" there Mayer continued to give advice on materials and answered readers' questions about art-making problems. Articles credited to him were published for a year after his death in 1979.²²² His readership appears extremely eclectic: many of his correspondents were amateurs, but amongst the thousands of letters on technical questions in his papers are the names of well-known artists and conservators.

From the beginning Mayer's advice columns made frequent mention of synthetic

²¹⁹ Mayer, Ralph. *The Artists' Handbook of Materials and Techniques*, 1st edition 1940, 2nd edition 1957 and third edition 1970, New York: Viking Press. A posthumous revision was carried out in the late 1980s by Stephen Sheehan, an art professor at Yale University.

²²⁰ His standard rate per response in the early 1950s was \$25, an amount which was at the time about the equivalent of half of the weekly salary of a schoolteacher.

²²¹ Mayer, Ralph. "The Artists Technical Research Institute", *Art Journal*, Volume 34, Number 4, 1974, pp. 316-319. City University of New York art professor and paintmaker Herb Aach took over as president of the Institute when Mayer's health failed. Herb Aach Papers, AAA, unmicrofilmed.

²²² Mayer died in August, 1979 but the "Technical Page" continued to be published under Ralph Mayer's name through August 1980. The posthumous column was apparently based on Mayer's collection of notes and produced by his widow Bena, with assistance from the painter and educator Herb Aach, and the conservator Gustav Berger. Brown 1984, p. 33; Other technical writers for the magazine after Mayer's death include Cliff Chieffo, an art professor at Georgetown University, Washington, D.C. and professor of conservation Barbara Keyser of Queen's University, Kingston, Ontario.

painting media which he often endeavored to dissuade artists from using.²²³ Mayer refused to endorse the use of synthetic media in art for many years. Typically he would express doubts about the new media based on observations of failed techniques and emphasize the lack of scientific research in the area:

"Despite their laudable efforts to pioneer in the development of new materials, some painters have rather over-reached themselves in adopting unproved methods too hastily: without benefit of the expert guidance which should be made available to them. I saw an example of this recently, where, without the usual 15 to 20-year interlude, a 1950 prize-winning picture at a national exhibition was actually flaking to bits and falling from the canvas."²²⁴

His column is inconsistent however, since sometimes he appears to change his mind. For example in 1952 Mayer appeared to grudgingly accept the use of synthetic media in art:

"Acrylic picture varnish is apparently faultless. If it has any point of inferiority to damar, it may be a tendency to attract and accumulate dust and dirt rather more rapidly -- but this is merely an impression which will take some time to confirm."²²⁵

In spite of apparent wavering on this question, he generally maintained a negative assessment of the new media in the 1950s. The following admonition is typical of the message in Mayer's early columns:

"Paints, varnishes, enamels and lacquers, including the water-miscible polymers or dispersions, which consist largely or entirely of resins (hard, soft or synthetic) are too susceptible to embrittlement to be classed as 'permanent'."²²⁶

He also complained that artists' paintmakers were not forthcoming about their formulations:

²²³. Surprisingly he endorsed the use of ethyl silicate for outdoor murals, claiming to have been "instrumental in introducing it in this country both to the artists and to the makers of the raw materials". This method has proven questionable due to stringent requirements for procedures which artists often do not follow closely enough to ensure permanence. Mayer, Ralph. "On the Material Side: Fresco Painting", *Art Digest*, Volume 24, pp. 16-25.

²²⁴. Mayer, Ralph. "Material Progress", *Arts Digest*, Volume 26, November 1, 1951, p. 53, 63.; and Mayer, Ralph. "Artists' Oil Paints: Part III", *Arts Digest*, Volume 25, January 1, 1951, pp. 26-27, especially p. 26. He sometimes made very concrete criticisms detailing problems with specific media. For example he mentioned that vinyl dispersions did "not have a good reputation for permanent adhesion and penetration into gesso or plaster surfaces". Mayer, Ralph. "On the Material Side", Volume 26, July 1, 1952, p. 22.

²²⁵. Mayer, Ralph, October 15, 1952, p. 2.

²²⁶. Mayer, Ralph. "On the Material Side", *Art Digest*, Volume 28, January 1, 1954, p. 27.

"None of the commercial "plastic paints" has yet been offered with a statement of contents or even a hint as to the class of resin that it contains (except an occasional clear picture varnish made of one or another of the acrylics). In this connection I am not too happy about the use of the term "plastic paints". . . . The term "plastic" used in this sense means practically nothing. Very likely, it is good merchandizing to take advantage of the public's high regard for the valuable properties and the modernity of these materials we call plastics; but in view of the expected future development of the so-called "plastic paints" we should be given some inkling as to what class of material they contain. . . .

I do not want to give the impression that I oppose or am critical of improved paints made of modern materials. . . . however I am not enthusiastic about the premature adoption of materials . . . which have not had adequate scientific research and testing under the specific requirements of the artist-painter."²²⁷

In private consultations with artists his assessment of synthetic media was however often less critical of artists' paintmakers. For example in correspondence with artist Josef Albers, he explained that detailed identification of the ingredients of a synthetic varnish "are not withheld for reasons of secrecy, but because of occasional changes and developments in available solvents, and new types and sources of acrylic resins".²²⁸

Mayer's conservative taste revealed itself frequently in a variety of attitudes relevant to innovative techniques for example in discussions about the appropriateness of materials and in diatribes against technical liberties which he associated with abstract trends.²²⁹ Generally however he endeavored to maintain a distance from aesthetic doctrines in his column, presenting his opinions as cold, technical interpretation of proven "fact".

Mayer's innate resistance to unsystematic artistic innovation was however counterbalanced by an avid interest in the use of modern science to improve materials

²²⁷ Mayer, Ralph. "On the Material Side: Question and Answer", *Arts Digest*, Volume 27, June 1, 1953, p. 22.

²²⁸ Albers had requested information on the composition of "M" varnish, a solution of pure methacrylate resin (acrylic acid esters) according to Mayer. Letter from Ralph Mayer to Josef Albers, January 21, 1956. Mayer Papers, AAA, reel D211.

²²⁹ Mayer, Ralph. "The Material Side: Appropriateness of Materials and Techniques I, II and III", *Art Digest*, Volume 24, May 1, 1950, p. 28-2; June 1, 1950, pp. 22-23 and July 1, 1950, pp. 25-26; and Mayer, Ralph. "The Material Side. No Uncertain Terms", *Art Digest*, August 1, 1950

and studio conditions for the artists. In 1952, well before the health-conscious craze of the late 1960s, Mayer warned artists of hazardous materials and practices.²³⁰ Mayer was acutely aware of the health hazards of volatile solvents used with many traditional and modern material. Yet, on the subject of synthetic resins his confidence in the professionalism of chemical manufacturers inadvertently led him to be used as a spokesman for promoting the safety of the new painting materials for artists. A paintmaker purportedly reprinted 10,000 copies of one of Mayer's columns in which he lambasted artists for exposing themselves to dangers by trying to make their own paints from synthetic media. Mayer condemned artists for:

"careless and haphazard experimentation with industrial raw materials that were never intended to fall into their hands, but were produced to be handled exclusively by trained and qualified industrial personnel under controlled industrial conditions. This is an entirely different matter than buying or making real artists' materials, that is items that are designed specifically for artists' use."

The article went on to describe the process of collaboration between chemical manufacturers and artists' paintmakers in the development of artists' paints as ultimately much safer for the artist:

"The manufacturer of a new resin would be the first to introduce it to the artists' material people if it were suitable for their purposes, and the artists' material manufacturers, being highly competitive are constantly on the lookout for low-cost materials with desirable properties. They investigate all likely resins and have so far rejected all but a very few, on the grounds of toxicity or impermanence, yet some artists will presume a superior technical know-how and attempt to *discover* them for themselves. Not all of the newer materials made for painters and sculptors have been proven, by thorough tests or experience to be positively equal to traditional standards for permanent adhesion and film stability but that are intended to meet artists requirements of longevity and safety, and so are preferable to the industrial products for the experimentally minded artists who seeks effects beyond those obtainable from the older materials."²³¹

²³⁰ Mayer, Ralph. "On the Material Side: The Hazards of the Trade I and II", *Arts Digest*, Volume 26, March 15, 1952, April 1, 1952, p. 33

²³¹ This column was responding to a question from a reader prompted by an article in another magazine on the hazards of volatile solvents and fumes from synthetic materials used in sculpture. According to a note by Mayer in his files these were reprinted by Grumbacher without Mayer's knowledge. "Ralph Mayer's Technical Question and Answer Page" Reprinted from *American Artists*.

Thus Mayer's confidence in scientific method and, by extension, its products occasionally prevailed in his discourse about new media.

Another theme in Mayer's discussions of modern versus traditional materials was connected to his rivalry with his competitor Taubes. Mayer's promotion of the idea that systematic research on new materials could lead to improvements was expressly framed as a refutation of the kind of mystification about artists' studio practices which Taubes encouraged. Specifically Mayer opposed the use of Taubes' painting medium and varnish based on copal resin which Taubes claimed was a rediscovery of lost historical techniques. Mayer objected to Taubes' formulations referring to Taubes both directly and indirectly.²³² Mayer's disparaging remarks about the search for lost techniques of old masters can be read as an expression of opposition to the retrograde themes in Taubes' ideas about techniques which were being published in a competing magazine at the time.²³³

Even later in the 1970s Mayer continued to emphasize risks of impermanence and lack of knowledge about synthetic paints.²³⁴ Nonetheless Mayer frequently

December 1963. Ralph Mayer Papers, AAA, reel D-211. *ibid.* See also, Mallery, Robert. "The Air of Art is Poisoned. A Distinguished Avant-Garde Sculptor, Drawing from His Own Experiences and Adducing Other Cases, Warns of the Dangers Inherent to the Studio Use of Certain New Materials". *Art News*, Volume 62, Number 6, October 63, pp. 34-37, 60-61.

²³² Squabbles erupted between the two writers over the use of resin in painting media and questions about the durability of different materials and their resistance to cleaning. These technical disputes may also have been intended to stimulate readership in the two magazines. Mayer, Ralph. "Hard and Soft Resins: A Reprise", *Art Digest*, Volume 26, July 1952, p. 22. Mayer's denunciations of the search for the "lost secrets of the old masters" appear also to be intended as a direct assault on Taubes' claims about the new painting medium he developed which Henry Levison's company Permanent Pigments began to produce in the mid-1950s. Mayer, Ralph. "On the Material Side: About Legendary 'Secrets'", *Art Digest*, Volume 28, October 1953, p. 32.

²³³ Mayer was also highly critical of a book by the American-based French restorer Jacques Maroger. Mayer, Ralph. "Maroger, Jacques. *The Secret Formulas and Techniques of the Masters*, New York: Studio, 1948." *Magazine of Art*, November 1949, p. 272-273. See also Jacques Maroger Papers, AAA, microfilming in progress at the time of writing.

²³⁴ He often stressed embrittlement and "the very doubtful permanence of adhesion between the two different layers". See for example his comments on "Is Polymer Permanent?" and "Will I Like Polymer?" in Mayer, Ralph. "Ralph Mayer's Technical Question and Answer Page", *American Artist*, May 1969, p. 12; Mayer, Ralph. "Technical Page: All About Acrylic Polymers", *American Artist (Special Issue on Acrylics)*, Volume 38, Issue 383, June 1974, p. 47.

mentioned synthetic media, making thousands of readers aware of their use by artists and conservators.²³⁵ His column thus provides insights into technical concerns related to the appropriation of new media by the art students and artists who wrote to Mayer for advice at the time.

However there were other trends in discourse about the new media in magazines during the period when synthetic artists' paints were being introduced, notably expressed in enthusiastic articles about the potential of new materials in relation to varied aesthetic preoccupations. After Mayer stopped writing for *Art Digest*, the magazine began to publish a new series on technical themes called "Studio Talk" which represented a change of orientation from Mayer's rather stuffy "scientific" approach. In the 1950s two university art professors wrote stories for the series, Vincent Longo and Bernard Chaet.²³⁶ The writers tended to highlight recent work by young artists and often focussed on new techniques using synthetic media and modern tools. Their articles frequently included reflections on how specific techniques related to expressive or formalist goals in art. Longo mentioned many specific applications of the new media to painting: as fixatives for casein, as a painting medium to hasten the drying of oils, as varnishes and in acrylic gessos to prepare painting grounds.²³⁷ Chaet was the first to

²³⁵ Mayer, Ralph. "On the Material Side: Recent Trends in Painting Mediums", *Art Digest*, Volume 24, March 1, 1950, p. 22; Mayer, Ralph. "On the Material Side: About Resins (two parts)", *Arts Digest*, Volume 26, September 1, 1952, p. 24; and October 15, 1952, pp. 23-24

²³⁶ Longo wrote a few stories in 1956; Chaet wrote a series of articles published between 1956 and 1959 which were reprinted in book form. He later authored a second book on studio techniques. Chaet, Bernard. *Artists at Work. Technical Means and Personal Vision in Painting, Sculpture and Graphics*. Cambridge, Mass.: Webb, Inc. 1960, 156 pp.; and Chaet, Bernard. *An Artist's Notebook. Technique and Materials*, New York: Holt Reinhart and Winston, 1979.

²³⁷ For example, on the topic of the preparation of painting grounds Longo interviewed art instructor Charles Seide who made the acrylic based "Quick-On Gesso". Seide gave instructions for the preparation of grounds using the new medium and new tools like the staple gun. Longo, Vincent. "Plastics in New Art Materials: Interview with Charles Seide", *Arts*, Volume 30, May 1956, p. 62-3; Longo, Vincent. "Studio Talk: Improvement in Tubed Casein: Interview with Ted Davis", *Arts*, Volume 30, August 1956, p. 29; Longo, Vincent. "Studio Talk: Notes on Still life Painting. . . New Materials Facilitate Fast-Drying Oil Technique", *Arts*, Volume 29, October 1955, p. 62.

give detailed instructions for the use of synthetic paints *per se*.²³⁸ In his articles he often included descriptions about how to prepare pigmented media using chemical products. Chaet frequently suggested that artists contact art materials manufacturers or chemical suppliers like Rohm and Haas and the Du Pont company for more information.²³⁹ His articles provided up-to-the minute news about developments in art materials. For example he treated current conservation issues, raising questions about the concerns of conservators with new varnishes at almost the same time that these issues were being investigated.²⁴⁰ He also covered other dimensions of art materials, for example in articles about paintmaking.²⁴¹

Chaet and Longo were enthusiastic about innovative technical processes and the potential for the use of many types of new media in art. Yet both were careful to emphasize that technique was only part of the creative process, exhibiting an awareness of debates raging amongst critics at the time about the place of technique in formalist and existentialist approaches to modern painting. They stressed that becoming a "serious" artist was not merely a question of technical know-how or novelty. In Chaet's words:

"The last twenty-five years have seen the introduction of many new methods and materials -- perhaps more than any other period. New materials, originally created for industry, both have made traditional concepts easier to manage from

²³⁸. In fact before taking over the series Chaet was interviewed by Longo on his use of polymer tempera, a pigmented "emulsified polyvinyl acetate resin". Longo, Vincent. "Studio Talk: Techniques for Polymer Tempera: Interview with Bernard Chaet" *Arts*, October 1956, p. 67.

²³⁹. Chaet, Bernard. "Studio Talk: Lucite Plastic with Oil: Gabor Peterdi's Experiments", *Arts*, Volume 31, March 1957, p. 67; Chaet, Bernard. "Young Artists Experiment--Rhoplex: An Acrylic Emulsion," *Arts*, Volume 31, September 1957, p. 63; Chaet, Bernard. "Studio Talk: The Concept of Space and Expression: an Interview with James Brooks", *Arts*, Volume 33, January 1959, p. 67; and Chaet, Bernard. "Studio Talk: Pastel Used in Conjunction with Plastic-- An Interview on Mixed Technique with Arnold Bittleman", *Arts*, Volume 31, March 1959, p. 67.

²⁴⁰. One article on picture varnishes and the new media was based on an interview with the conservator of the Yale University Gallery. It refers to pioneering work by Gettens and Stout as well as the research of Feller appeared at the time of the ground-breaking meeting of conservators on varnishes in Oberlin, Ohio. Chaet, Bernard. "Studio Talk-- The Problems of the Final Varnish: Interview with Andrew Petryn", *Arts*, Volume 31, October 1957.

²⁴¹. Chaet, Bernard. "Studio Talk: Interview with Leonard Bocour", *Arts*, Volume 32, February 1958, pp. 62-63; and Chaet, Bernard. "Studio Talk: A Tour of the Grumbacher Factory: The Production of Oil Paints and Brushes", *Arts*, Volume 33, 1958, p. 64.

a craft standpoint and inspired new experiments. . .

All of these inventions, new media, and experiments were activated by personal vision; the medium remains the *medium* [Chaet's emphasis] -- that is, the transmitter of a concept. Technical virtuosity for the sake of "crafty" effects is not the concern of these artists. But, finally, the artist (in any medium) imagines his future work in terms of this technique or method or materials. The marriage of concept and technique is then complete."²⁴²

During the late 1950s and early 1960s acrylic paints for artists gradually became more widely distributed but the early discourse about synthetic media in art magazines, particularly in technical advice columns shows that appropriation of the new media presented instrumental and aesthetic challenges to artists. Health concerns and worries about permanency were also issues in the early reception of synthetic painting media. By publishing hard-to-obtain news about new materials and suppliers, and by being basically the only regular printed sources for up-to-date information in this area outside of trade literature in art supply shops, mass-produced art magazines maintained a readership interested in technical information about art-making throughout North America. Soon, artists' handbooks treating the new media began to appear.

Artists' Handbooks and Synthetic Painting Media

Best-seller author Max Doerner has been quoted as saying that "Learning the technique of painting from a book is just as impossible as learning to swim on a sofa."²⁴³

In spite of suspicions by many artists that the only way to learn to paint is by doing it, many instruction manuals and treatises on painting technique intended for practical use were published in the U.S. after the end of the W__orld War II. Selected handbooks which describe and prescribe painting practices using synthetic media published or sold

²⁴² Chaet classified the approaches in three categories: an approach in which choice of a medium with specific limitation deliberately affects the final work, another approach involves individual adaptations of a traditional medium and a third category avails itself of new materials to develop radically new effects. Chaet 1960, p. 14.

²⁴³ Max Doerner quoted in Wehlte 1975, p. 27.

in the United States after the war are presented and concisely analysed in Appendix B, Tables 11-13.

These books are central socio-historic documents to the study of the diffusion of technical knowledge which present practices, beliefs and participants in the development of synthetic paints for artists. Many of these handbooks have been considered elsewhere in connection with their authors and users, therefore they will be considered only briefly here. Of course the texts vary greatly and may be categorized in many different ways like any piece of literature. In particular, the background and socio-professional activities of the authors sometimes appear to lead to obvious biases (such as only mentioning a particular brand of artists' paint in some cases of affiliations with manufacturers).²⁴⁴ Manuals also differ according to intended readerships (for example, connoisseurs, historians, conservators, "professional" artists, students or amateurs), anticipated uses (art historical scholarship, studio class teaching aid, authentication or practical applications), period (historical, modern or combined), type of technique treated, range of techniques, amount of detail, level of technical difficulty, and so on.²⁴⁵

The precise place of such handbooks in artistic practice and discourse is difficult

²⁴⁴ Several of the handbooks are based on research conducted in partial fulfillment of university degree requirements. Hayes (1970) and Woody (1965) based their books on work done for their master's theses at Tufts University and Mexico City College respectively. However Hayes' thesis is quite different than his book, focussing on technical experiments with different media. Jensen (1964) based his book on his Ph.D. Dissertation in art education at Columbia University. Torche wrote another dissertation on applications of synthetic media to art for a degree education from the same institution. Hayes, Ronald Wesley. *The Development of a Synthetic Resin Paint for Artists*. Master of Fine Arts Thesis. Tufts University. 1962; and Torche, Judith Helene. *New Developments in Aqueous Art Media*. Ph.D. Dissertation in Education. Teacher's College, Columbia U. 1965.

²⁴⁵ Theories of literary communication advanced by Jurt and Jauss stress the reader's reception as part of the process of creation. Bolecki goes further, emphasizing the complex interplay of various categories of readers and the form and content of the work itself. Jurt, J. "Introduction", *La Réception de la Littérature par la Critique Journalistique. Lectures de Bernanos, 1926-1936*. Paris: Éditions Jean-Michel Place, pp. 3-49; Jauss, Hans R. "Ésthetique de la réception et communication littéraire", *Critique*, no. 413, October 1981, pp. 1116-1130; and Bolecki, Włodzimierz. "L'Espace socio-culturel et la lecture", *La Réception Littéraire. Acta Universitatis Wratislaviensis, No. 635*, Warsaw: Romanica Wratislaviensia XX, 1983, pp. 74-81.

to ascertain. Handbook authors frequently state outright that their goal is to influence their readers. Yet the books cannot be read as an indication of the incidence or prevalence of practices since even publications which sold thousands of copies could well have sat unused, propping up a window in a stuffy studio. Some interviews with artists do confirm that certain texts like that of Ralph Mayer were owned and used, not only by beginners and amateurs but even by highly successful avant-garde artists at the time of their experimentation with synthetic media.²⁴⁶ However, the meanings ascribed to the handbooks form part of complex notions about the place of technique in art which vary greatly from one artist to another. Minimally handbooks can be read as sources for information about the concerns and state of knowledge of their authors (and editors) who were sometimes very active participants in the development or promotion of new materials. Although most of these handbooks were written by people who described themselves as artists, almost all of them appear to have earned a living in some other activity related to the arts, paintmaking and teaching. A few texts have also been written by conservators. As well, the texts frequently refer to artists, paintmakers and other sources, providing further insights into practices and trends in discourse about materials at different times.

Manuals on synthetic painting media in the arts begin with Gutiérrez' text on techniques and formulas for mural painting, written in 1949 and published in 1956 which has been extensively discussed. By 1959 a handbook which included proprietary brands of synthetic paints for artists had been published.²⁴⁷ These early monographs were necessary because broad-scope artists' handbooks at the time generally contained nothing about the new media. In the 1960s many handbooks which treat synthetic media appeared. Sometimes synthetic paints were included in manuals treating a wide

²⁴⁶. Roy Lichtenstein, Yves Gaucher, and Alex Colville in particular mentioned owning *The Artist's Handbook* (different editions).

²⁴⁷. Brooks, Leonard. *Oil Painting . . . Traditional and New*. New York : Reinhold, 1959.

range of topics, or they were added in revisions. In addition more monographs on the new media appeared, ranging from relatively authoritative texts written in collaboration with pioneers in synthetic paintmaking for artists (like Levison and Gutiérrez) to shoddy how-to books for amateurs and children.²⁴⁸

The potential impact of artists' handbooks on artistic practices and on standards for art materials has worried some conservators, although these texts are commonly used by conservators themselves as references and sometimes recommended to artists.²⁴⁹ Conservator Barbara Keyser referred to twentieth-century artists' manuals as "encyclopedias of ignorance" in a critical evaluation of selected manuals (see Appendix B, Tables 11-13). She explained that this expression was not meant as a criticism of authors but intended to stress the difficulty of making recommendations to artists about modern materials because 1) the exact composition of many high-technology products used in modern materials is not known and even if known cannot be modified by non-technical persons; 2) not enough is known about the behaviour and stability of paintings; 3) there is a lack of interdisciplinary communication which leads to authors being unfamiliar with research in materials sciences "which conservators take for granted".²⁵⁰ Keyser points to a particular danger with handbooks: the repetition of misinformation over many decades transmitted from one authority to another.

Some authors of artists' handbooks have also been active advocates of "interdisciplinary communication" about technical issues related to the arts, particularly in order to give artists and paintmakers better access to scientific research about modern materials like synthetic paints. Indeed, many of the authors wore several hats, personifying interdisciplinarity in their multiple social roles in the arts. A few of these

²⁴⁸. Woody (with Levison), 1966; and Gutiérrez and Roukes, 1966.

²⁴⁹. Keyser (1980) has critically analyzed them. Goist, a conservator at Oberlin College gave them as references in a series of short articles published under one title. Pommerantz, Louis, David C. Goist, and Robert L. Feller, "Conservators Advise Artists", *Art Journal*, XXXVII, Fall 1977, pp.35-39.

²⁵⁰. Keyser 1980b, p. 42.

writers have been very prominent participants in the development of standards for art materials in the U.S., in Germany and in France, notably, Max Doerner, Ralph Mayer, Mark Gottsegen, Kurl Wehlte, and of course Gettens and Stout, who wrote an encyclopedia of art materials intended for conservators but used by artists too. Interest in the quality of art materials has thus obscured distinctions between artists, paintmakers, conservators and other categories of users and producers, providing a shared focus for collaborative efforts.²⁵¹

Developing Standards for Artists' Paints: Some Key Organizations

Efforts to organize and regulate the manufacture of art materials began in earnest in North America at the time of New Deal art projects as previously discussed. New scientific approaches to testing materials had been endorsed by arts administrators as a politically acceptable means to establish a basis for controlling artistic production in publicly-funded programs. Thereafter, conservators, artists and art materials manufacturers became actively engaged in developing standards related to artists' paints with little input from arts administrators. Various initiatives to control and improve the quality of art materials continued sporadically for decades until more systematic work was begun in the 1970s. Respecting standards has remained a voluntary matter except for government regulations concerning labelling hazardous products, and more recent truth-in-labelling laws.

The discourse on standards for art materials was undertaken in connection with activities of a variety of different organizations. In this section the focus is on organizations specifically concerned with paintmaking standards, rather than on

²⁵¹ This type of collaboration has tended to occur primarily at a national or regional level although there have been occasional calls for international cooperation. Sanchez-Posada de Arteni, Myriam and Stefan C. Arteni. "Painter, Manufacturer of Artists' Materials, and Conservator. Historical and Aesthetic Significance of Their Role in the Survival of a Painting." *ICOM Committee for Conservation, 6th Triennial Meeting, Ottawa 1981, Working Group on 20th Century Paintings. Volume II*. London: ICOM, 1981, pp. 81/11/2-1 - 2-9.

artists' organizations. Some key organizations involved in the early work on standards in the U.S. are shown in Appendix B, Table 2. Although these are American-based groups many have a large Canadian membership and sometimes meet in Canada but have few Mexican participants therefore are not completely North American in their purview.

Paintmakers Tackle the Issue of Quality and Fair Practices

Professional organizations concerned with the art materials trade in North America are primarily a 20th century phenomenon where artists' paintmaking is a relatively recent full-time occupation. Records remain of a few individuals who combined careers as artists (usually portraiture), artists' colourmen and storekeepers as early as the late 1700s but artists depended heavily on European imports of materials during colonial times and long after.²⁵² (Along with tea, artists' paints were among the luxury items which the English crown decided to tax heavily in one of the key events leading to the American Revolution.) Manufacture of artists' paints in North America appears to have developed in concert with the expansion of the numbers of practicing artists around the middle of the nineteenth century. Highly idiosyncratic habits of manufacture and labelling persisted until the mid-twentieth century. Paintmakers relied heavily on endorsements of their products by artists and artists' organizations and continued to do so even in relatively recent advertisements for synthetic media.²⁵³

One such organization, the National Committee on Technic [sic] of the New York-based American Artists Professional League actively promoted improvement of the quality of art materials. Paintmakers like Henry Levison participated in the

²⁵² Katlan, Alexander W. *American Artists' Materials Suppliers Directory. Nineteenth Century*. Park Ridge, N.J.: Noyes Press, 1987, pp. 1-33.

²⁵³ Endorsements by artists were a regular feature in advertisements. "Art, Box 11", Arts and Crafts, Box 1", and "Paints, Box 12". Warshaw Collection, National Museum of American History Archives, Smithsonian Institution. Paintmaking companies continued this practice into the 1970s in advertisements for acrylic paints in mass magazines like *American Artist*.

committee's meetings about developments related to artists' paints. The League published short technical pamphlets as a service to artists.²⁵⁴ It also gave its stamp of approval to certain art materials, allowing some manufacturers to use its logo on their trade literature (such as Levison's company Permanent Pigments during the 1950s).

Artists' paintmakers could participate in some of the many paint and varnish clubs but eventually several informal regional groups began to meet during the 1930s (notably in Chicago and New York).²⁵⁵ These represent early attempts to organize participants in the art materials trade. In New York City for example, there was the "Chowder Club", which became the Art Materials Club of New York in 1947 and was later renamed the Artists' Materials Manufacturers' Association. It included manufacturers and wholesalers only.²⁵⁶

In the 1950s the first meeting of the National Art Materials Trade Association (NAMTA) took place. NAMTA included dealers, distributors, wholesalers and manufacturers from across the nation in its membership.²⁵⁷ NAMTA's activities included: the development of techniques for a business statistics survey (because art materials aren't listed systematically in federal statistics), efforts to obtain discounts for member on freight charges and insurance rates, dissemination of information about legislation such as the Federal Hazardous Substances Labeling Act, interfacing with consumers associations like the National Art Education Association and the College Art Association, promotion of professionalism (using sales manuals and video tapes), public

²⁵⁴. For example, Fischer, 1931.

²⁵⁵. In Europe many artists' paintmakers belong to the *Confédération européenne des associations de fabricants de teinture, d'encre d'impression et des couleurs d'artiste* (European Confederation of Dye, Printing Ink and Artists' Colour Manufacturers Association).

²⁵⁶. The 1947 date was given in a facsimile reprint of "The Story of Bocour Artist Colors Incorporated", reprinted from the *15th Anniversary Banquet Program*, New York: Art Material Club Inc., November 3, 1962, pp. 20-21. 1949 is given as the founding date for the Artist Materials Manufacturers Association in "How It Began", *A History of NAMTA. The First 25 years*. Hasbrouck Height, N.J.: National Art Materials Trade Association, 1975, p. 6.

²⁵⁷. "1707-National Art Materials Trade Association", *Encyclopedia of Associations*, Part 1 (Sections 1-6) Entries 1-10323, Detroit: Gale Research Inc., 1992, p.1711.

relations/market expansion, regional seminars (primarily aimed at dealers with exhibitors from the wholesalers and manufacturers group), and training and education (with certificates of completion). NAMTA also developed an award system featuring the annual Art Award (for non-members such as famous art collectors like Joseph H. Hirshhorn and art technologist Ralph Mayer), and appointment to the Hall of Fame for members (like Henry Levison and Len Bocour).²⁵⁸ NAMTA also published magazines and bulletins to keep in touch with members.²⁵⁹ The association's national conventions held twice a year feature hundreds of exhibitors and smaller regional shows are also held.²⁶⁰ These trade shows allow manufacturers, dealers and distributors to exchange information and are sometimes attended by conservators and artists although they are not generally open to the public.²⁶¹

Most of the American-based pioneers in synthetic paintmaking for artists were active members in NAMTA, notably, Henry Levison, his brother David, Len Bocour, and Sam Golden. Asked whether they shared technical information about their innovations at NAMTA meetings, Sam Golden replied emphatically "no", the paintmakers each were trying to be the first with new products.²⁶² Once new trends became established however NAMTA committees did prepare training manuals to inform dealers and salespeople about new materials and their uses. Technical manuals

²⁵⁸. *A History of NAMTA. The First 25 years*. Hasbrouck Height, N.J.: National Art Materials Trade Association, 1975, pp. 63-70.

²⁵⁹. Two major publications are *Art Materials Today*, *The Retailer's Guide to Success* (9 issues annually), and a monthly magazine called *Art Material Trade News*.

²⁶⁰. The 1994 exhibitor prospectus listed 628 different exhibitors. Most of these were manufacturers or distributors of artists' materials, tools and related equipment (like carrying cases). "Exhibitor Prospectus", NAMTA's 44th Annual International Convention and Trade Show, Chicago, Illinois, May 18-21, 1994. Courtesy NAMTA head office.

²⁶¹. The meetings are sometimes held at the same time as meetings of the Sub-Committee for Artists' Paints and Related Materials of the American Society for Testing Materials to allow exchange of information between the two groups.

²⁶². Sam Golden Interview, 1991.

on synthetic paints for artists begin appearing around 1960.²⁶³ NAMTA was concerned with issues related to standards primarily inasmuch as they related to business concerns and was a particularly vocal participant in negotiations about labelling of new paints during the 1960s and 1970.

Another organization of art material companies, the Art and Craft Materials Institute (ACMI) was founded in 1936 as the Crayon, Watercolor and Craft Institute "to encourage the use of art materials and to certify that children's art supplies were safe".²⁶⁴ For four decades the primary activity of the Institute was to conduct toxicology tests in order to decide whether to certify products for use by children. It also worked on commercial standards for materials for children's art education in schools. The Institute was not particularly involved in the use of synthetic materials for adult art supplies until 1982 when it expanded its activity to include a non-toxicity certification program for adult art materials. Different levels of certification have been developed as well as special warning labels for materials which are somewhat toxic under certain conditions. Products which have been certified are allowed to use the appropriate ACMI seals. Because of the popularity of water-based paints in school settings and the resulting tremendous market, some makers of synthetic paints for artists were also members of this group and more joined in 1982 when toxicology warnings became mandatory for artist' paints.²⁶⁵

263. What is probably the first manual treating water-borne acrylics appeared in 1960. Anonymous. "Polymer Emulsion Colors", *Aqueous Mediums. Sales Training Manual #3*. Hasbrouck Heights, N.J.: National Art Materials Trade Association, April 1960, pp.12-13. See also Anonymous. *Acrylics (Polymer Emulsion Colors). Sales Training Manual Number 12*. Hasbrouck Heights, N.J.: National Art Materials Trade Association. n.d.. Bocour Papers, Courtesy Mrs. Ruth Bocour, New York City.

264. Anonymous. "The Crayon, Water Color and Craft Institute, Inc.: A History", mimeographed sheet, 2 sides, dated November 1982. Enclosure in letter from Laurie A. Doyle, associate director, Art and Craft Materials Institute, to Jan Marontate, May 3, 1984. Luke, Joy Turner. "Tackling the Alphabet Soup: ACMI", *Pen, Pencil and Paint*. Washington: National Artists' Equity Association Materials Research Committee, Spring 1994. pp. 1-2.

265. The institute publishes an annual membership list available from their head office in Boylston, Massachusetts to the public and potential consumers.

The National Bureau of Standards and Artists' Paints

Work on voluntary commercial standards for artists' paints continued after the development of the first recommended commercial standard for artist paints in 1942.²⁶⁶ These commercial standards were developed in collaboration with the U.S. National Bureau of Standards (NBS) which had become involved in artists' paints in 1939 as a result of the initiatives of the Boston Paint Testing and Research Laboratory, part of a New Deal art project. The NBS mandate regarding such standards was to coordinate communications between producers (in this case art materials manufacturers) and consumers (artists and art institutions) by explaining procedures, circulating written proposals and issuing the final publication.²⁶⁷ It did not enforce the standard and increasingly restricted its budget for helping prepare standards. By the 1960s most of the cost of developing standards was assumed by industry, not the government. Nine artists' paintmakers contributed to the printing costs for publication of the 1962 standard.²⁶⁸

The Standing Committee on the Recommended Commercial Standard for Artists' Oil Colors was relatively inactive after the publication of the 1942 standard until the 1950s when members began to consult about revisions. The original committee had included conservator Rutherford Gettens, artists' handbook author Ralph Mayer, and paintmaker Henry Levison among the 22 participants.²⁶⁹ Hundreds of others had

²⁶⁶. For example, a standard was developed by the Crayon, Watercolor and Craft Institute for schoolchildren's art supplies in 1943.

²⁶⁷. "Procedure for Establishment of Commercial Standards", *What They Say About Commercial Standards*. #36713 Washington: U.S. Department of Commerce (Office of Technical Services, Commodity Standards Division). In Ralph Mayer Papers, AAA, reel D-213: 544.

²⁶⁸. Bocour, Craftint, Grumbacher, Permanent Pigments, Sargent Art Materials, Shiva Artists Colors, Talens, F. Weber and Winsor and Newton. By 1980 all costs were to be assumed by industry, including administrative charges, leading to a re-assessment of the usefulness of affiliation with the National Bureau of Standards in this matter.

²⁶⁹. The committee included 10 representatives of artists' organizations (which included Ralph Mayer as a representative of the American Artists' Congress and Frank Sterner of the Boston Paint Testing and Research Laboratory), 10 manufacturers, with Gettens as chairman and a representative from the National Bureau of Standards as secretary. *Artists Oil Paints, Commercial Standard CS 98-42*, U.S.

attended meetings including paintmaker Len Bocour. There were approximately three hundred acceptors in the list of signatories published in the first standard (representing artists' organizations, educational institutions, distributors and manufacturers). By contrast, the 18-member committee which produced a new standard for artists' oil in 1962 was substantially different with far fewer artists in attendance. It was composed of only 2 representatives of a single artist association (Artists' Equity), 10 manufacturers (this time including both Bocour and Levison plus a NAMTA representative), and six researchers or conservators (including Gettens, Feller, Mrs. Mayer). Only 52 acceptors appeared in the second published standard.

Interest in the commercial standard flagged in part because it was seen as ineffectual. The oil paint standard had covered rules about nomenclature, paint composition and light-fastness testing methods but negotiations amongst committee members had led to a far less stringent set of guidelines than some members had sought. Paintmaker and chemist Levison was particularly concerned that the standard was meaningless and stifling progress in the application of scientific methods to artists' paintmaking since

"the way the standard was written any company that was reasonably honest could pass. . . "270

The 1962 standard for oil paints still did not include synthetic media to the chagrin of Levison who was also ardently lobbying for major changes in light-fastness testing procedures.²⁷¹ By the early 1970s Levison had decided to take matters directly to the government bureau but he found the combination of bureaucracy and the lack of

Government Printing Office, Washington, D.C., 1942, pp. 9-10; "Condensed Record of General Conference on Artists' Oil Paints, February 9, 1940, Museum of Modern Art, New York City," Ralph Mayer Papers, AAA reel D213: 33-37.

²⁷⁰ Interview with Joy Turner Luke by Jan Marontate, April 29 1994.

²⁷¹ Extensive correspondence about the development of the two standards, including some of Levison's proposals, may be found in the Ralph Mayer Papers AAA reels 211-213, and in the Rutherford J. Gettens Archives at the Freer Gallery of Art in Washington. Some additional documentation on the 1962 standard is also in the Herb Aach Papers, AAA.

technical expertise of government officials insurmountable obstacles. In his words:

"I didn't know the ins and outs of the Bureau of Standards. They'll take somebody from brassieres and move them to artists' colors you know. . . Joy Luke who was a member of Artists' Equity in Washington . . . knew the Washington climate. And she stepped into the breach. . . ²⁷²

Revision of the NBS standard did not appear viable, partly because the whole method for communicating relied on written correspondence rather than face-to-face meetings.²⁷³ Luke, a representative of National Artists' Equity, researcher and advocate for the improvement of the quality of artists' materials spearheaded the creation of a committee on artists' paints in the powerful American Society for Testing and Materials where at last work began on standards related specifically to synthetic painting media in the arts.²⁷⁴

Health-consciousness, Quality and American Society for Testing and Materials

Other issues besides questions of permanence marked discourse about artists' paints at this time. Beginning in the 1950s and mounting throughout the 1960s concerns about health issues began to mount. The Federal Hazardous Substances Labelling Act, enacted in the early 1960s, required that art materials be labeled for possible health hazards. This labelling requirement posed particular problems for makers of synthetic artists' paints, since many of the materials were so complex that even paintmakers themselves did not know the exact composition of the chemical products on which they were based. Yet the relatively new water-borne acrylic paints (which many companies were starting to produce in the early 1960s) at least offered the advantage of not requiring volatile solvents for use. Many experts on materials,

²⁷². Levison and Marshall 1986.

²⁷³. Interview with Joy Turner Luke, May 1996.

²⁷⁴. Luke runs a small non-profit research laboratory called Studio 231 where she conducts tests on art materials and she produces the quarterly *Pen, Pencil and Paper*. Interview with Joy Turner Luke, April 1994.

including even Ralph Mayer, initially felt they might provide a relatively healthy alternative to oil paints and spirit-soluble synthetic paints but uncertainties mounted as medical research began to reveal possible carcinogenic effects of plastics.²⁷⁵

Health-consciousness and increasing concerns about toxicity brought the issue of regulation of artists' paintmaking to the attention of the public and politicians in 1970s.²⁷⁶ Even though political support for truth-in-labelling was grounded in health-consciousness it served other purposes as well. By this time, two key areas of concern emerged in discussions about standards for artists' paints: toxicity (or safety) and quality (particularly with reference to permanence).²⁷⁷ For decades critics of shoddy products had been calling for truth-in-labelling about pigments as a way of stopping manufacturers from mixing cheaper fugitive pigments with more expensive permanent ones and then only mentioning the latter. Many consumer advocates (including art supply dealers as well as artists) became involved in a nation-wide campaign for legislation regarding labelling.

Some of the core participants in the establishment of the Sub-Committee on Artists' Paints and Related Materials of the American Society for Testing and Materials (ASTM) had met through involvement with the Inter-Society Color Council (ISCC). The ISCC was initially composed of representatives of heterogeneous national organizations interested in some aspect of color, such as in dentistry (for matching false teeth), automobile manufacture, advertisement, art and so forth.²⁷⁸ People interested in art materials at the ISCC included conservation scientists, paintmakers, academics,

²⁷⁵. See the previous discussion about Grumbacher's use of Mayer's technical advice column. "Ralph Mayer's Technical Question and Answer Page" Reprinted from *American Artists*, December 1963. Ralph Mayer Papers, AAA, reel D-211.

²⁷⁶. McCann, Michael. *Health Hazards Manual for Artists*. New York: Foundation for the Community of Artists, 1975; and McCann, Michael. *Artist Beware*. New York: Watson-Guption, 1979.

²⁷⁷. Interviews with Joy Turner Luke 1994-1996.

²⁷⁸. The council diffused state-of-the art scientific research findings about methods of testing and ideas of perception as well as information about socio-cultural variations in tastes and habits.

conservators and artists.

At the ISCC Luke and Levison met principle contacts interested in developing standards for artists' paints such as consumer advocate, artist, gallery owner and art supply dealer Zora Pinney.²⁷⁹ Luke worked in close collaboration with Levison for many years and also undertook tests with other trained chemists of various products including artists' acrylic paints focussing heavily on light-fastness tests.²⁸⁰ Luke's deep-seated interest in testing art materials for permanence stemmed in part from observing the deterioration of artwork done by her father who was a cartoonist. She was a key figure in the establishment of the Sub-Committee on Artists' Paints and Related Materials of the National Society for Testing Materials (ASTM). Luke was the first chairperson of the committee, followed by art professor and handbook author Mark Gottsegen and then by a member of Golden's paintmaking company, Ben Gavett.²⁸¹

The ASTM committee on artists' paints officially began to meet in 1978. First artists, conservators and manufacturers concentrated heavily on the complex question of labeling for toxicity and safety related to legislation and government pressure.²⁸² Various testing procedures were refined. Standards were also developed regarding composition, physical properties and performance requirements for various types of

²⁷⁹ Luke mentioned several contacts at the ISCC including paintmaker Levison, professor of art conservation (and biographer of Ralph Mayer) Hilton Brown, art dealer Zora Pinney and many others. Pinney donated a large collection of contemporary artists' materials and related documentation to the National Gallery of Art in Washington in 1993 which is the first major study collection of its kind. Luke 1994. Luke, J.T. "Heroines: Zora Sweet Pinney", *Pen, Pencil and Paper*. Volume 1, Number 3, Spring 1994, p.3. "Zora Pinney," video, National Gallery of Washington, 1995.

²⁸⁰ Luke, Joy turner, Fred W. Billmeyer, Jr., Treva Pamer and Romesh Kumad Pamer. *Identification of Pigments in Artists' Paints, 1977-1980*. Princeton, N.J.: Inter-Society Color Council, 1990, 1994. Treva (Chemistry Department, Jersey State College). "Summary of Some Results of Tests on Artists' Acrylic Emulsion Paints". Sponsored by Artists Equity Association and the Inter-Society Color Council. mimeograph, n.d.. Courtesy Joy Turner Luke.

²⁸¹ Luke chaired the committee for 12 years. Gottsegen took over in 1990 and again in 1996. Gavett chaired between about 1994 and 1996.

²⁸² Investigations of mislabeling of artists' paints were undertaken by the Federal Trade Commission in 1979. The Environmental Protection Agency and amendments to the Federal Hazardous Substances Act to include chronic illness related to specific identification of products and disposal procedures also affected artists' paints.

synthetic painting media.²⁸³ Once again most of these are voluntary standards which do not legally have to be respected although some ASTM standards have been used as a basis for government regulations and legislation (notably about toxicity).²⁸⁴

Although this work of the ASTM falls outside the time period covered by this study, it has been included here because it illustrates the continuation of collaborative trends begun half a century ago. It also shows the continuing participation in the development of standards by pioneers in research and development of new media for artists.

Concluding Remarks on Standards and Artists' Paints

Standards concern both social control and cooperation as efforts to institute normative practices for the protection of certain segments of society, sometimes to the detriment of others, offering the possibility of assigning blame or responsibility. In the case of artists' paints, early proponents for setting standards came from within the ranks of paintmakers. Therefore historically in the U.S. there is not a clear developed antagonism between manufacturers and consumers (artists and conservators) which might be expected in discussions about regulating the quality of artists' paints, although certainly there have been instances of friction between different groups, notably on the subject of labelling.

Discourse about standards at first relied heavily on the authoritative aura of science. Scientific methods of analysis began to penetrate art worlds in the 1930s, notably for authentication, conservation and in materials testing. The use of scientific

²⁸³ These include the following standards: *Standard Specification for Artist' Oil, Resin-Oil and Alkyd Paints*, ASTM D 4304. Philadelphia: American Society for Testing and Materials; and *Standard Specification for Artists' Emulsion Paints*. ASTM D 5098. Philadelphia: American Society for Testing and Materials.

²⁸⁴ For example a 1988 amendment to the Federal Hazardous Substances Act requires the use of the ASTM "Standard Practice for Labeling Art Materials for Chronic Health Hazards" (ASTM D 4236).

method was associated with efforts towards "professionalization" in conservation and to some extent in paintmaking. Metaphors borrowed from the sciences permeate artistic practices at mid-century as well, in discussions of artistic "experiments". Synthetic painting media, being products of science and had the "aura" of scientific progress about them. In some accounts they became associated with innovative, modern practices in both laboratories and artists' studios. Artists used commercial (or industrial) synthetic coatings or became alchemists concocting their own pigmented paints from chemical products before the production of synthetic media made specifically for them.

Paintmakers began to adopt new chemical products later than conservators and artists. Not incidentally one of the earliest pioneers in synthetic paintmaking for artists, Henry Levison, was an avid researcher who had advocated the systematic use of scientific techniques in paint manufacture since the 1930s and who pushed for the development of standards throughout his life. The impact of his early efforts at developing standards for artists' paints on the actual manufacture of materials is however debatable. Although initially promoted by bureaucrats and administrators the first standards served no purpose as an administrative device for controlling artistic production or paintmaking, and as applications of scientific methods illustrated the difficulty of translating theory into practice. They did however have a serendipitous effect of promoting interdisciplinary communication on issues relevant to artistic practice.

Increasing interest in art-technical issues became apparent in publications for artists. Guidelines for normative practices in the artistic use of the new media soon appeared in art magazines and handbooks, but coordinated efforts at developing standards for artists' paints largely ignored the new media, in part because of the difficulty of arriving at consensus about even relatively simple formulations of traditional paints. The inception of labeling for health hazards made systematic disclosure of product ingredients mandatory and provided impetus for renewed efforts at developing other standards. Discussions about standards beginning in the 1960s were marked with

disillusionment about science and technology which was symptomatic of anti-authoritarian, counter-cultural trends. Ambivalent attitudes were also grounded in empirical observation of the negative effects of modern chemicals on health and the environment. Suspicions about high technology and the limits of scientific method combined with concerns about the durability of art materials as art became an investment commodity.

Work on standards for artists' paints and related studio practices took a variety of forms and was an on-going activity which involved many different interest groups, illustrating the importance of voluntary associations in innovative cultural production. Collaborative efforts cut across occupational boundaries but also reinforced differences, as conservatorial interests, artistic goals, writers' agendas and paintmakers' preoccupations found points of consensus and contention. Artists were held responsible for the quality of their works by collectors, conservators charged with preserving it, and paintmakers increasingly called upon to divulge the very secrets which had allowed them to distinguish themselves. This transition from relatively individualized creative entrepreneurs to members of a responsible "profession" took place within a relatively small universe of paintmakers, to which we will now turn.

Université de Montréal

Synthetic Media and Modern Painting:
A Case Study in the Sociology of Innovation

par

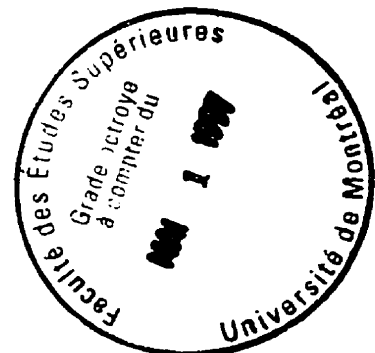
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CHAPTER 7 – The Universe of Artists' Colour Manufacturers and Innovation: Stories of Other Paintmakers

How do the pioneers in synthetic paintmaking fit into the universe of artists' colour manufacturers in general? What other paintmakers became involved in the development of new media? Do any social patterns emerge? This section will briefly present the reference population of art materials manufacturers, focussing on entrepreneurs and individuals producing synthetic paints for artists in North America.

As we have seen, the first synthetic paints for artists were produced by small entrepreneurs who had been active in the U.S. in the 1930s. Larger art supply manufacturers only produced synthetic paint after the early innovative efforts of smaller companies. The itineraries of the best known of the pioneers in the development of new media in the arts have been presented in detail in preceding chapters. They were : Leonard Bocour and Sam Golden (makers of "Magna", the first commercial brand of spirit-soluble acrylic artists' colors), Henry Levison (who produced "Liquitex", the first full line of water-borne acrylics) and, of course, José Gutiérrez (recognized particularly for his diffusion of formulas for mural paints).

Others were working on new media at the same time. Some developed only a few products but did not produce a full line of artists' colours. Soon however a second generation of pioneers introduced their formulations based on new media. Water-borne synthetic paints, especially acrylics, proved very popular in the 1960s, when they also started to be more widely available internationally. With few exceptions by 1980 most major manufacturers of fine artists' colours appear to have produced at least one line of water-borne synthetic paints.¹ Thus the paintmakers who created early lines of synthetic paints may be considered an avant-garde indicative of an emerging trend in the

¹. A few companies still specialized in fine quality traditional colours, usually oils, in the U.S. (J. H. Hatfield's Color Shop in Boston during the 1930s and early 1940s, and Gamblin of Portland, Oregon), in Europe (notably, *Oudt Hollandse Olieverwen Makerij* known as Old Holland in the U.S., Sennelier, Blockx, and J.P. Stephenson) and in Japan (Turner).

context of artists' paintmaking.

Defining the Reference Population of Artists' Paintmakers

By all accounts, the population of manufacturers of artists' paints is small world-wide but no census of art materials manufacturers has been found. Governments do not publish statistics about them, in part because many of the businesses are small and rather ephemeral thus difficult to track.

Sources of Information About Paintmakers and Omissions

Records of advertisements, mentions in handbooks, in magazine articles, in documents from voluntary associations and archives allow for a rough reconstruction of key figures in the recent history of artists' paintmaking, but the list obtained is necessarily incomplete.² Using these sources there are systematic omissions, notably of small paintmakers not mentioned in widely-distributed publications.³ Since the company names were located in publications available in North American enterprises there is also a strong emphasis on North America, which is the focus of the study. Companies which concentrate their activities on other geographic locations are almost certainly underestimated in the list of companies outside of North America which was

². The papers of Zora Sweet Pinney, an art supplies dealer, researcher and consumer advocate provide information of selected manufacturers active in the 1980s. Partial archives of two other companies (Bocour and Weber) are also in collections which should eventually be open to researchers: Zora Pinney Papers, National Gallery of Washington; Leonard Bocour Papers, AAA; and F. Weber Papers, Getty Conservation Institute. In addition some relevant information may be found in the following collections: Leonard Bocour Papers, 1953-1964, George Arents Research Library, Syracuse University, Syracuse, New York and "Romaine Collection: Trade Catalogues of Artists' Materials and Supplies, 1896-1927", Department of Special Collections, Library, University of California, Santa Barbara.

³. Companies were not included if written confirmation of their existence was not found. This eliminated several firms and paintmakers mentioned in interviews which could not be traced such as Onyx (a paint company reputedly in Western Canada), Williamstown Paints (a brand purportedly sold in New York), paintmakers Max Plansky and Milton Resnick, and Pottinger (a California-based product apparently used by students at Chouinard School where Siqueiros taught in 1932).

compiled for comparison purposes.⁴ Similarly the importance of small, short-lived companies who happened to appear in written sources may be over-estimated, since they are given the same weight in the tally as established firms which have been in existence for decades. Thus there are distortions introduced by relying solely on these written sources, because it is difficult to assess factors which may be crucial for understanding the place of these paintmakers within paintmaking and artmaking contexts. The role of a company certainly varies according to some combination of historic, economic and socio-political variables such as length of time in business, extent of distribution of products, charisma of company representatives, leadership in the introduction of successful new products, market share, perception of the quality of the products by artists, reputation and so on.

The Category of "Artists' Paintmakers": Criteria for Inclusion and Exclusion

Above and beyond the omissions and biases introduced by the sources of information, the question of which companies to include in an inventory of artists' paintmakers raises issues regarding how to define the category and who to include in the reference population. The first criterion for inclusion is that the paints manufactured must have been expressly made for use by artists. Makers of paints intended for industrial or commercial applications were excluded regardless of how popular their products might have been with artists. Here other distinctions between types of paints according to intended uses become crucial, notably the differences between paints for the fine arts, craft, design and school children.⁵ Companies that only made paints for

⁴. Clearly there are probably manufacturers of artists' quality synthetic paints in South America, India and China although none have been located in the sources used (except for student-grade and crafts paint manufacturers).

⁵. Artists paints are traditionally the most permanent, craft or design paints less so and children's paints the least permanent, although expectations in this regard have changed. Most design work used to be considered ephemeral, for example, posters, theater sets, various illustrations to be reproduced (like advertisements and cartoons), and architectural drawings. However, as many of these items came

crafts and design use or for school children have not been included. Such manufacturers are fairly easy to distinguish because they usually clearly identify the intended uses of their products to avoid later complaints about impermanence.⁶ Some of these crafts and designers paints were certainly also used by artists but again their makers are excluded from the list unless they made fine artists' paints as well. (Of course, some manufacturers of artist-quality paints also produced student-grade colours or paints for other uses, as was the case with Bocour and Golden's fabrication of colors for paint-by-number craft kits which were made for other people's labels.)

The major criterion for inclusion in this study was that the paintmakers must have produced a line of pigmented synthetic paints specifically for artists. This stricture was initially based on the assumption that paintmakers who made synthetic artists' colours would represent a distinct and small fraction of a much larger body of artists' paintmakers overall, which proved incorrect. Instead they were in the majority. Most artists' paintmaking firms located have marketed a line of synthetic paints, (although it should be noted here that only companies active after the end of World War II figure in this tally).⁷ Forty-eight manufacturers of synthetic artists' paints meeting the criteria have been found in the written sources (28 in Canada, the U.S. and Mexico, and 20 outside North America). Only a half a dozen additional artists' paintmakers making traditional oil paints (but not synthetic paints) have been found.⁸ There are also a few companies which have manufactured non-pigmented synthetic painting products, such

to be considered "collectable", designers began to seek more permanent media. Another difference is that non-toxicity requirements are much more stringent for children's art materials.

⁶. Although as previously noted not all of craft or design paints are inferior to artists' grade paints, especially in recent years when more attention has been given to longevity and safety.

⁷. Thus companies like Martini Artists' Color Laboratories of Long Island City belonging to artist and magazine writer H. E. Martini and Permia Colors (of New York City, represented on the Standing Committee of the 1942 First Recommended Commercial Standard for Artists' Oil Paints by David Gansler) have been omitted.

⁸. See footnote two above.

as varnishes, which have been excluded.⁹ Similarly, manufacturers of specialty products which may have contained synthetic resins (such as wax mediums for encaustic painting) and makers of casein paints (a semi-synthetic product made from milk known from ancient times) have been eliminated unless they made other artists' paints based on modern synthetic media as well.¹⁰

The focus in this section will be on a brief account of selected early manufacturers of synthetic paints for artists based in North America. The discussion will concentrate on companies which produced these new paints by 1965. This cut-off date has been established because by about 1970 most artists' colour manufacturers began to develop paints based on the new media, whereas up until the mid-1960s synthetic paints for artists were still not well-known or widely distributed and therefore their manufacturers may be considered innovators in some respects.¹¹

Tables 3 through 8 in Appendix B also include complementary information about companies bringing out the new products later and about paintmakers based outside of Canada, the U.S. and Mexico to allow for a more general impression of the characteristics of the reference population across time and in different places.

⁹ Brooklyn-based artist and teacher Charles Seide's Museum Artists Materials company is not listed, since it only advertised acrylic gessos, mediums and varnishes, but apparently did not produce paints. Trade literature on the company dating from the 1950s was found in the papers of Leonard Bocour. Longo, Vincent. "Plastics in New Art Materials: Interview with Charles Seide", *Arts*, Volume 30, May 1956, p. 62-3; Seckler 1952, pp. 67-69, 89-91; and Bocour Papers, National Gallery of Art, Washington.

¹⁰ Two well-publicized manufacturers of wax mediums during the 1950s were Dorland's and Torche's. In the late 1940s several companies producing casein advertised for one or two issues of an art magazine such as Robert Rosenthal Artists' Colors (makers of Luminall Casein Colors) and Ruxton Casein Colors.

¹¹ Dates of introduction of products have been ascertain using a variety of sources, notably two artists' handbooks which reported on recent manufacturers of synthetic paints for artists appeared in late 1965 and early 1966. They gave names of manufacturers which had not yet appeared in the art press and therefore are considered sources of up-to-date information about available products. Woody (1965) and Gutiérrez and Roukes (1966).

Early Synthetic Paints in North America (By 1965)

By 1965 there were at least nine companies producing water-borne acrylics or similar types of synthetic paints in North America which advertised in national art magazines or were featured in handbooks (see Table 3, Appendix B). In addition to Levison's company Permanent Pigments, Bocour and Politec, the following firms appear to have begun production of synthetic paints by 1965: California Products, Grumbacher, Shiva, Utrecht, Weber (in the U.S.) and, in Mexico, Evo-Art. A ninth company, Polymer Tempera, had begun and stopped production before the mid-1950s. A tenth manufacturer, American Artists' Color Works, may also have produced a water-borne acrylic in the mid-sixties (or slightly later). As well, spirit-soluble pyroxylin paints for artists, made with a similar base to the nitrocellulose automotive lacquer Duco, were produced and widely-distributed by at least one manufacturer: Devoe and Raynolds.¹² Most of these companies had close ties with artistic communities and were active in voluntary associations like the National Art Materials Trade Association. Five of the U.S. companies sent representatives whose names appear on the lists of participants in meetings about the recommended commercial standards for artists' colours. The U.S. companies that did not attend (California Products, Polymer Tempera and Utrecht) had not been formed at that time. The stories of the companies and the innovators behind them provide clues about the ways in which paintmakers are related to art worlds or to communities involved with applied science.

The Occupation of Artist-Paintmaker and the Introduction of New Paints

Many of the early manufacturers of synthetic paints for artists had an aspiring artist at the company's helm or in a key position, notably: Bocour Artist Colors, Politec, Polymer Tempera, Shiva, California Products and Utrecht (See Appendix B, Table 5).

¹². The product was known as Dev-O-Lac.

An early company, perhaps the first, founded with the specific goal of producing a line of water-borne synthetic paints (although they were not acrylics) was begun by a Boston-based artist and art educator, Alfred Duca (b. 1920).¹³ In about 1945 he set up a short-lived company called Polymer Tempera, a generic name which he also adopted as the brand name of his product. Duca was a student of German-born Karl Zerbe, an influential teacher known for his avid interest in materials. Zerbe had studied at the Munich Academy in Germany (where the renowned artists' handbook writer Max Doerner taught) and spawned at least two generations of artists' handbook authors.¹⁴ With help from chemists at the Borden Chemical Company Duca developed a process to make a water-borne medium for painting which dried clear.¹⁵ He did not manufacture paints for long and by 1952 had begun to freely share his formula with any artists who were interested.¹⁶ Duca's formula was basically a modification of a medium used in a common white glue used in schools, making it clearer and less acidic to prevent interfering with pigments. Duca's interest in new media and willingness to share his technical knowledge are reminiscent of José Gutiérrez. Like Gutiérrez, Duca had studied at the Pratt Institute in Brooklyn and like Gutiérrez, Duca released his formula for use by artists and allowed it to be published in artists' handbooks.¹⁷ Sometimes however artists just used Duca's basic idea dispensing with the technical refinements and simply substituting a proprietary brand of white glue.¹⁸ Other manufacturers of tempera at the time may also have been using similar formulas for tempera, in particular Shiva

¹³ Chaet, Bernard. "P.V.A. Emulsion Tempera: Alfred Duca", in Chaet (1960), pp. 31-36; and Woody (1965), pp. 109-112.

¹⁴ He taught Reed Kay (1961) who in turn taught Mark Gottsegen (1993).

¹⁵ It was a polymerized polyvinyl acetate. Chaet (1960), p. 36

¹⁶ Wight, Frederick. "Zerbe Paints a Picture", *Art News*, Volume 51, 1952 pp.26-29, 53-54.

¹⁷ Woody (1965); Gilbert, Dorothy (editor) "Duca, Alfred Milton", *Who's Who in American Art*, New York: R.R.Bowker, 1966, p.121.

¹⁸ Artist Ken Noland mentions mixing dry pigments with Elmer's glue in about 1955 or 1956. Moffett, Kenworth. *Kenneth Noland*, New York: Abrams, 1977, p. 101, n. 3.

which produced a brand called NuTemp.

Shiva Artist's Colors was founded in Chicago in 1919 by Ramón Shiva, a Spanish-born artist and inventor.¹⁹ He began his career as a commercial artist but also exhibited his paintings, notably at the Art Institute of Chicago, where he had studied. His company was a leader in the development of casein paints for artists, which were very popular just after the war. Shiva participated in matters of concern for paintmakers, for example by attending meetings on the recommended commercial standards although he does not appear to have been a central figure in national organizations.²⁰ He sold the company, moved to New Mexico and died in 1963 just before the introduction of the company's line of artists' acrylics (around 1964). The company changed hands several times subsequently, increasingly concentrating on crafts products.²¹ However, Shiva's successful innovation with the introduction of an artists' quality line of casein paints had made an impact on other manufacturers in a variety of ways. Many other paintmakers were inspired to produce lines of casein artists' colors in the 1940s. Furthermore, Shiva's experience with casein showed that an innovative fine art paint could open new business opportunities.

The link between casein and acrylic is not merely a via psychological or metaphoric associations with commercial success. Casein resembles some features of

¹⁹ Although some biographical information about Shiva (1893-1963) was found, no-one in the company which purchased the Shiva name could be located with knowledge of the history. The founding date was located in a 50th year advertisement in *American Artist*. Anonymous. "Shiva Golden Year Painting Prize Awards for Winners in Leading American Art Shows", *American Artist*, Volume 33, Number 5, Issue 325, pp. 35-36; Sparks, Esther. *A Biographical Dictionary of Painters and Sculptors in Illinois, 1808-1945*, Volume II. Ph.D. Dissertation in Art History, Northwestern University, 1971, p. 606; Falk, Peter Hastings (editor), *Who Was Who in American Art*, Madison, Conn: Sound View Press, 1985, p.566; and Dawdy, Doris Ostrander. *Artists of the American West*, Chicago: Swallow Press, 1981, p. 264.

²⁰ He was however present at the 1940 meeting on the standard held in New York City at the Museum of Modern Art. "Condensed Record of General conference on Artists' Oil Paints" in Mayer Papers, AAA, reel D213: 33-37

²¹ The Shiva company and name was sold by Delta Technical Coatings to the art materials distributor Dick Blick in about 1993.

modern synthetic paints because of its handling properties and its aesthetic appeal (since it could be used with water, was relatively flat and had a matte appearance). Indeed the similarities in characteristic of acrylics and casein were noted by the National Society of Painters in Casein which changed its name to include acrylics in order to reflect the interest of members in fast-drying aqueous media.²² In addition, at least in Britain, social politics made have played a role in the decline in popularity of casein in favour of modern synthetic aqueous painting media. According to conservator Paula Volent, stories by paintmakers indicate that water-borne acrylics were adopted by British artists largely to replace casein colors which had been boycotted on moral grounds after World War II. (Casein is a milk by-product and social activists believed at the time that milk products should be used to feed hungry children, not for making art.)²³

Limits in the availability of art supplies after World War II were at the origins of the founding of another innovative paintmaking company. Artist Norman Gulamerian could not find any Belgian linen in New York City and began to import it in 1949, selling at discounted prices.²⁴ Soon he and his brother Harold were also making paint in the basement of their Brooklyn home. Like partners Len Bocour and Sam Golden, or Henry Levison and his brother, the Gulamerian brothers settled on a division of labour with Norman handling marketing and public relations while Harold ran the plant. The Gulamerians began selling primed canvas which they first prepared with slow-drying oil-based gessoes. Seeking a quicker alternative they developed a faster-drying acrylic

²². The society was founded in 1952 and was renamed the National Society of Painters in Casein and Acrylic in 1971. Handbook author Ralph Fabri was Honorary Life President. National Society of Painters in Casein and Acrylic Records, 1952-1977, AAA, unmicrofilmed; Anonymous. "Casein, Acrylic Show at Museum", *Wausau Daily Record-Herald-Merrill Daily Herald*, Wednesday, January 5, 1972, p. 30.

²³. Volent referred to research reported orally to her by Sally Woodcock who was working on company history at C. Roberson and Company, a prominent manufacturer of artists pigments in London, England. Interviews with conservator and researcher Paula Volent, National Gallery of Art, Washington, D.C., May 1995. Tape 1.

²⁴. Conversation with Jennifer Pagano (daughter of Norman Gulamerian), May 1994.

gessos with the help of chemists.²⁵ Their company, Utrecht Linens (later known as Utrecht Art and Drafting Supplies) dates its first line of water-borne acrylic paints to 1957, although advertisements located which announce the new paints do not appear until later.

Another early brand of water-borne synthetic paints developed by an artist was the fruit of research conducted for a Master's thesis.²⁶ Ron Hayes studied the potential for use by artists of different types of synthetic media during the early 1960s while a student at Massachusetts College of Art in Boston.²⁷ There was an active interest in new media in Boston at the time, inspired in part by teachers at the Boston Museum School, where paintmaker Alfred Duca and teacher Karl Zerbe had pursued experiments since the 1940s. Hayes worked in consultation with technical representatives from the Rohm and Haas chemical company and chemists knowledgeable about commercial paintmaking.²⁸ After completing his thesis he took his basic formulas to a commercial paintmaking company in the Boston area called California Products which helped him refine his formulas for a brand of paints called New Masters.²⁹ The paints, which were made between 1963 and 1968, were a combination of two synthetic media. They were very distinctive since they were thick colors sold in clear plastic tubes which showed the intense hues of the paint inside.³⁰ This was the first water-borne acrylic for artists available in tubes on the market. Hayes toured art schools lecturing to classes and

²⁵. Conversation with Norman Gulamerian, May 1994

²⁶. Hayes (1962). He also wrote an artists' handbook, Hayes (1968).

²⁷. The art college was affiliated with Tufts University which granted the degree. Interview with Ron Hayes by Jan Marontate, April 1994.

²⁸. Hayes mentioned specifically the assistance of Ed Lamy, a technical sales representative of Rohm and Haas Chemical Company and a polymer chemist named John Gillis. Hayes Interview, 1984.

²⁹. According to Hayes the company name was coined because the owners wanted to associate their paints with their ideal of bright, sunny colours popular in West Coast culture at the time. Hayes Interview, 1984.

³⁰. The paints were a copolymer (a combination of acrylic and polyvinyl polymers). The formulas were sold to Hunt Manufacturing Company.

giving demonstrations of the new paints in much the same way Russ Woody and Len Bocour were doing. He became an art professor in the Design Department at the Massachusetts College of Art.

American Artists' Color Works was also directed by an artist.³¹ German-trained artist and art educator Herbert Aach headed the company for 15 years.³² Like Gutiérrez and Duca, Aach had studied at the Pratt Institute of Design in New York. His biography also states that he studied in Mexico, although no details have been found on possible connections with technical innovators there. Aach was a university art professor and conducted research on colour theory in the 1960s through the 1980s, joining the Inter-Society Color Council.³³ He represented the company at meetings on paint standards in the early 1960s and later was active in the American Society for Testing and Materials. He also was close to handbook author Ralph Mayer and directed the Artists' Technical Research Institute founded by Mayer after Mayer became ill. The company made an acrylic paint called Vanguard which does not appear in advertisements until the early 1970s by which time the brand name and formulas had been sold to another manufacturer but no early records of the company have been found.³⁴ It is likely that some Vanguard paints were produced for sale in the New York City area earlier but dating is uncertain.

Finally, among the proprietary brands of synthetic paints for artists developed by an artist which appear to have been made before 1965 is the line produced by Evo-Art in Mexico. The company was set up by artist José Luis Gurdubay who had

³¹. Records on the company have not been found. In Standing Committee for the 1942 Recommended Commercial Standard for Artists' Oils the representative of the company was Dana Johnson and it was based in Brooklyn. In the 1962 Standing Committee Herb Aach represented the company and the address was Hazleton, Pennsylvania.

³². Aach studied in Cologne. Gilbert, Dorothy. "Aach, Herbert", *Who's Who in American Art*, New York: Bowker, 1966, p. 1.

³³. He taught at Queen's College, City University of New York.

³⁴. The brand name was sold to Hunt Manufacturing Company. No company records were found in Aach's papers. Herbert Aach Papers, AAA.

experimented with vinylites and other media since the late 1940s. Gurdubay knew Gutiérrez and had participated in the experimental workshop on modern painting materials at the Polytechnic Institute in Mexico City.³⁵ Gurdubay worked for Gutiérrez' company Politec and then set up his own paintmaking company which was not financially successful. Later he was a partner in the manufacture of primed imported canvases with fellow artist Luis Filcir, and he subsequently established another manufacturing firm to produce artists' acrylics called IND-Art which also ceased production due to financial problems.³⁶

Thus many of the early manufacturers of synthetic paints for artists were guided in their innovations by artists *cum* paintmakers. More established companies began to make the new paints, too and in these cases trained chemists appear to have played central roles.

More Established Companies with Trained Chemists Launch New Lines

As a general rule companies which launched lines of synthetic paints for artists were relatively new. An exception was Devoe and Raynolds, a New York-based firm which made a spirit-soluble pyroxylin lacquer similar to Duco but made with artists' grade pigments and widely available in the 1950s.³⁷ As far as water-borne paints were concerned two other relatively established companies produced early acrylics for artists: Grumbacher and Weber.

³⁵. Conversation with José Luis Gurdubay, June 1994.

³⁶. Products made by Gurdubay's companies were used by prominent Mexican muralists like Arnold Belkin and seen in Belkin's former studio by the author. Conversation with Luis Filcir, June 1994; Interview with artist Patricia Quijana Ferrer (widow of Arnold Belkin), June 1994.

³⁷. The company began in 1848 as Butler and Raynolds. It stopped making artists' paints in 1962, selling the fine arts' part of the company to Craftint. *Bulletin of the American Group*. International Institute for the conservation of Historic and Artistic Works, Volume 3, No. 1, October 1962, p. 6.. See also Heckel, George B. *The Paint Industry, Reminiscences and Comments*. St. Louis, Missouri: American Paint Journal Company, 1931.

The F. Weber Company also dates from the 19th century.³⁸ The technical director of the Philadelphia manufacturing beginning in about 1920 was Fred W. Weber, a watercolourist, art critic, and author of an artists' handbook.³⁹ He lectured on art techniques and materials at various art schools in New York, Washington and Philadelphia.⁴⁰ In the 1950s the company made an synthetic resin medium for painting called Res-N-Gel which was a jelly-like substance to increase transparency.⁴¹ In 1964 the company began to produce water-borne latex polymer paints.⁴² Little information about the company's history was accessible at the time of writing.

Another paintmaker producing synthetic artists' colors before 1965 was also an older art supply manufacturer bearing the name of its Austrian-immigrant founder M(ax) Grumbacher.⁴³ Grumbacher is one of the rare artists' colour manufacturers to have had

³⁸ It was established in 1853 as a successor to Janentzky and Weber Manufactures and Importers and incorporated in 1920. The early company papers are in the possession of the Getty Conservation Institute in California. "F. Weber and Company, Inc. Collection", unpublished inventory, February 22, 1996, Getty Center for the History of Art and the Humanities Library, p. 1

³⁹ Weber, F.W. *Artists' Pigments. Their Chemical and Physical Properties*, New York: Van Nostrand, 1923.

⁴⁰ He lectured on the chemical and physical properties of artists colors, oils and vehicles and on general art historical ideas about craftsmanship in painting. One of his lectures indicated that he had spoken at the Art Students' League and the National Academy of Design in New York City, the Corcoran School of art in Washington And the University of Pennsylvania School of Fine Arts. Weber, F.W. "The Craftsmanship of Fine Arts Painting", typescript with handwritten dates from December 31, 1934-January 10, 1935, from the F.W. Weber Papers, Getty Center for the History of Art and the Humanities, Santa Monica, California.

⁴¹ It was one of the few products made with synthetic media named in Mayer's second edition of his artists' handbook. Mayer (1957), p. 661.

⁴² Gutiérrez and Roukes (1964). Formulas and paint samples are in the possession of the Getty Conservation Institute. "F. Weber and Company, Inc. Collection, Paint Formula Books: Box 12, Folder II and Sample Books, 1925-1951 Series III, Box 34", unpublished inventory, February 22, 1996, Getty Center for the History of Art and the Humanities Library, p. 5-6

⁴³ Artist George Stegmeier who has worked for paintmakers since the 1950s when he was a mill hand for Len Bocour and Sam Golden began working for Grumbacher as a consultant on handling properties in 1979 and at the time of his interviews was the longest-standing company employee. Stegmeier wrote a brief company history based on interviews with retired staff. Although a very useful source for information, care should be taken with the dates given since several have proven inaccurate when checked against other sources. Some of these are noted in the discussion which follows. Interviews with George Stegmeier by Jan Marontate, March and April 1994. Stegmeier, George. Untitled typescript of Grumbacher Company History. n.d. 7 pages. M. Grumbacher Inc. Cranbury, New Jersey.

apparently neither a personal connection with artists (and artistic aspirations), nor any training in chemistry. Grumbacher started a brushmaking company in 1903 in New York and sold his brushes to artists in the thriving art community.⁴⁴ He began importing fine quality German paints and in the 1930s, when the New Deal art projects started he began to make artists' paints using formulae from the Schmincke Company in Germany.⁴⁵

The Schmincke company agreed to allow the use of their formulas by Grumbacher because they needed hard currency to help Jewish family members escape Nazi persecution. The German company sent a team of chemists to help Grumbacher set up the paintmaking operation in 1934.⁴⁶ The team was headed by Ernst Oswald Hesse, heir apparent to the Schmincke family business, who had completed studies in chemistry in Zürich and München. Most of the team returned to Germany in 1937 when Hesse's father died to help keep the business going and be near family members given the increasingly tense political situation surrounding Germany at that time. One team member, a chemist named Willy Nusinoff who was Jewish, stayed in the U.S. to avoid internment and worked for the Grumbacher company directing the paintmaking operations until his retirement in 1968.⁴⁷ Thus during the period of innovation in the development of synthetic painting media the Grumbacher company's paintmaking

⁴⁴. Chaet, Bernard. "Studio Talk: A Tour of the Grumbacher Factory: The Production of Oil Paints and Brushes". *Arts*, Volume 33, 1958, p. 64.

⁴⁵. According to Stegmeier Max died in 1939, passing ownership of the company to his nephews, Walter, Stanley and Joseph. The date of what appears to be Max's obituary was however 1933. *New York Times Personal Name Index*, 1163, O 24, 22:2.

⁴⁶. Peter Hesse, who became the fourth generation to head the family firm was born in the U.S. during this sojourn. Anonymous. *Chronik eines Familienunternehmens*, Düsseldorf: H. Schmincke Künstlerfarben. 95100 8/92. 1992, pp. 3-4; and Interview with Peter Hesse by Jan Marontate, June 1994.

⁴⁷. Willy Nusinoff represented the company on the Standing Committee for the 1962 Recommended Commercial Standard for Artists' Oil Paints. During this period several members of the Grumbacher family managed the business but in the mid seventies the company was sold to a large corporation. It was sold to Times Mirror in 1978, at which point many employees left. It was subsequently resold at least twice. Stegmeier 1994 and Luke 1994.

operations were largely run by a European-trained paintmaker with a background in chemistry.

In 1930s the Grumbacher company (aided by the chemists from Schmincke) developed a special line of paints (of undisclosed composition) for use on celluloid which they sold to the Walt Disney company for cartoon films (Cel-Tested Colors).⁴⁸ Here was another case in which new media proved remunerative for a paintmaker, though it was for design use. During the war the company furnished the government and armed forces with art supplies and participated in experimental work on camouflage colors for warships at the Brooklyn Navy yard where contact would probably have been made with synthetic media for military coatings.⁴⁹ Although the company managed to continue operations during all of the war it was deeply affected by the deaths of several family members. Even so the company was relatively early in producing a line of modern synthetic paint.⁵⁰ Grumbacher introduced a co-polymer paint called Hyplar in about 1962 which it reformulated completely several times, and which was not widely available until later in the 1960s.

Other North American Paintmakers and Trends Elsewhere

By the late 1960s other companies had begun to make synthetic colors for artists in North America. Stories about the history of some of them are presented to help give

⁴⁸. Several famous feature-length cartoons were apparently done with the new paints, notably *Snow White and the Seven Dwarfs* and *Fantasia*. Stegmeier n.d., p. 1.

⁴⁹. Stegmeier, n.d., p. 1. Some of the earliest applications of polymer coatings were developed during the first world war for marine purposes. (Moravetz, Herbert. *Polymer: The Origins of a Science*. New York: Wiley, 1985.) Recall also that the Passive Defense Project for the development of camouflage was staffed by some participants in the experimental work done by conservator Rutherford Gettens at the Paint Testing and Research Laboratory in Boston during the 1930s. Gettens had published some of the earliest papers on the use of methacrylates (acrylics) in the early 1930s as mentioned in Chapter 3.

⁵⁰. The obituary of the first hereditary successor to the founder, Walter, indicates he committed suicide in 1947, although Stegmeier gives the date as 1943. *New York Times Personal Name Index*, 936, Je 27, 23:7; the second successor, Stanley died in 1961 *New York Times Personal Name Index*, 293 D 30, 19:4.

a picture of the body of artists' color manufacturers in North America. As well, a few profiles of selected paintmakers from elsewhere emphasizing in particular companies which had a presence in North American markets.

Other North American Paintmakers: Two Canadian Examples

Information about the dates of introduction, the types of products and artistic or scientific affiliations of various other North American paintmaking companies are presented in Tables 3, 5 and 7. Although dating of products is uncertain in some cases, most of these companies assuredly began making synthetic paints after the 1965 cut-off date, and many were formed much later. Nonetheless similar the company histories show patterns similar to those observed in earlier manufacturers. An emphasis on artistic connections predominates although a few cases of companies founded by individuals with a background in the sciences, usually chemistry, come to light. One of the more recent companies, Golden Artist Colors, has been discussed in a previous section since it continued and built upon the pioneering work of Sam Golden and Len Bocour. Two other companies were researched in some detail, in part due to curiosity about the paintmaking experience in Canada: Stevenson's of Scarborough, Ontario (part of the Greater Metropolitan Toronto area) and Chromatech of Montreal.

David Stevenson started his making paint in his garage as a part-time activity in about 1965 and began his company when he was sixty years old in 1970.⁵¹ At first he only made oil paints but around 1973 he began to produce acrylics. He soon retired from his job as an inspector of electronics to make paint full-time. Stevenson was born in British Columbia and ran a gas station with his brother before serving in the military in World War II. He then studied art at the Ontario College of Art, graduating when he

⁵¹. Stevenson's children Robert and Charlotte continued to run the company after his death. Interview with Robert and Charlotte Stevenson, August 1972; and Hunter, Lorraine. "Scarborough Firm Adds Color to Art World", *The Toronto Star*, Friday July 1977, p. B1.

was about 40 years old. Thereafter, although unable to make a living as an artist, he kept up his contacts with local painters. Stevenson learned about paintmaking from an art professor who was in Ontario on a teacher's exchange from Holland. He had contacts with Toronto art conservator Albert Franck who was familiar with new synthetic American products in the 1950s and is known to have supplied artist-friends with materials.⁵² Stevenson belonged to the National Art Materials Trade Association briefly but found the commercial, profit-centered orientation of the association dissonant with his own Marxist views.⁵³ In a manner reminiscent of the Mexican socialists many years earlier, Stevenson focussed his efforts on producing fine artists' paints at prices which art students and aspiring painters could afford, a tradition carried on by his children after his death, but his paints were also used by prominent Toronto-based artists.

Michael Towe, Montreal-based maker of Chromatech acrylics, also initially worked at another career before studying art.⁵⁴ Towe was employed as a counsellor at a federal penitentiary in the Winnipeg area before moving to Montreal in the mid-1970s to study painting. He decided that he wanted to make his own paints because in his words:

"I decided that there were certain things I should be doing as an artist and one of those was making materials."⁵⁵

He began trying to learn about how to make acrylic paints by phoning commercial paint manufacturers to ask for advice. By his account the chemists at Sherwin Williams Paint Company, a manufacturer of housepaints, were very helpful although they thought that his idea of making artists' paints was humorous. Towe also contacted other artists'

⁵². Franck has been mentioned by conservator Marion Barclay in connection with the diffusion of information about Lucite 44, popular medium for paints made by avant-garde artists in the 1950s. Barclay (1992), p. 210.

⁵³. Charlotte and Robert Stevenson Interview.

⁵⁴. Interview with Michael Towe by Jan Marontate, April 16, 1993.

⁵⁵. Towe Interview (1993).

paintmakers like Len Bocour and Sam Golden for advice. He credits suppliers of materials for many creative technical ideas which helped him become an important for prominent Montreal artists, where supplies of major American brands were difficult to obtain in the large quantities used by Quebec versions of post-painterly abstraction because of poor distribution.⁵⁶ Like Sam Golden, he made his own equipment. He had close relations with many well-known artists, making custom paints for them.⁵⁷ He continued to pursue his career as an artist while making paint.

Tradition and New Trends in Britain and Continental Europe

European art materials manufacturers were severely affected by World War II and many were still recovering at the time when new media were being introduced in North America. Primo Levi, a writer, chemist and concentration camp survivor provides a deeply moving personal account of the resumption of activities in a paintmaking firm in Italy where he worked just after the war.⁵⁸ This was his first job after his release from Auschwitz but he recalled:

"Nobody was much concerned with me: colleagues, the director, and workers had other things to think about -- the son who wasn't returning from Russia, the stove without wood, the shoes without soles, the warehouses without supplies, the windows without panes, the freezing cold which split the pipes, inflation, famine, and the virulent local feuds."⁵⁹

Levi describes the relief offered from traumatic memories and the painful present by the

⁵⁶. Several artists interviewed mentioned the cost and poor distribution of Permanent Pigments' Liquitex acrylic paints, (in particular the unavailability of gallon-sized containers) as crucial to their decision to seek other brands. Interview with Yves Gaucher by Jan Marontate, 1993; and Interview with Claude Tousignant by Jan Marontate, 1993.

⁵⁷. He was mentioned by Montreal-based artists Guido Molinari, Yves Gaucher and Claude Tousignant in in-depth interviews. See Chapter 8.

⁵⁸. Although written about experiences in commercial paintmaking this account provides an evocative account with an unusually detailed description of specific chemicals and processes using in paintmaking at the time. Among other things he worked on a reformulation of alkyd resin paints to solve a problem caused by a bad shipment of chromium oxide, whence the title of the chapter. Levi, Primo (translated by Raymond Rosenthal). "Chromium", *The Periodic Table*. New York : Schocken, 1984, pp. 147-159.

⁵⁹. Levi (1984), p. 151.

investigation of new materials using procedures which were in his words "half chemistry and half police work".⁶⁰ Raw materials were in short supply and paint chemists in industry were called upon to make adjustments to formulations to adapt to penurious circumstances. However, in the fine arts, conformity to customs in the trade and desperate economic situations meant that most paintmakers concentrated on resuming production of traditional artists' colours at first, rather than experimenting with new materials. (A summary of findings about artists' manufacturers outside of North America which eventually made synthetic paints is presented in Appendix B, Tables 4, 6 and 8.) A few stories of company history will be presented here to illustrate similarities and differences with North American-based companies.

The first producer of modern synthetic paints for artists in continental Europe appears to have been the French company, Bourgeois (later Lefranc et Bourgeois) located in Paris, France.⁶¹ According to company history the Lefranc firm's roots go back to 1720, when a pigment and spice trader began making paints for the artist J.B.S. Chardin.⁶² The Lefranc company was also known for technical changes related to artistic trends, having developed the first screw-cap tubes for transporting paint during the mid-19th century, an innovation which was closely related to the vogue for open-air painting which ushered in the Impressionist movement.⁶³

In 1955 the chemist, professor of art conservation and handbook author Marc Havel who was employed by the Bourgeois company formulated a water-borne

⁶⁰. Levi (1984), p. 153.

⁶¹. Anonymous Trade Catalogue. *The Book of Colour*. no place: Lefranc and Bourgeois supplied by ColArt Americas, New York City in 1994.

⁶². The famed ancestor, Charles Lacref reputedly supplied paints to the Château de Versailles for the decoration of the Petit Trianon and participated in the restoration of the Chapelle Royale 225 years later. The name was changed in about 1840 by Alphonse and Jules Lefranc who had inherited the company. The company was undergoing extensive re-reorganization at the time of the fieldwork for this project since it had recently been purchased by Col-Art, a multinational company. Dates were difficult to establish because older employees were unavailable.

⁶³. Callen, Anthea. Techniques of the Impressionists, London: Orbis, 1982.

synthetic paint called Flashe although the paint does not appear to have been distributed until later.⁶⁴ At about the same time artists in Paris were experimenting with synthetic media formulas of their own.⁶⁵ For example, around 1954-55, artist Yves Klein met the *droguiste* Édouard Adam who supplied him with a colorless synthetic resin for use with a particular ultramarine blue pigment which Klein favoured.⁶⁶ Klein began calling the paint I.K.B. (International Klein Blue) and obtained an official patent for it.⁶⁷ The Bourgeois company's success with vinyl artists' colors proved extremely profitable and in 1965 it merged with its long-standing competitor, the Lefranc firm.

It was however a British manufacturer, Rowney, which is credited with introducing the first water-borne acrylic paints for artists to Europe in 1963.⁶⁸ (This primacy relies on distinguishing Rowney's acrylics from the vinyl paints produced by Bourgeois, but such "firsts" are important in paintmakers' discourse). Rowney was also a very old company. It had been founded in 1789 by two brothers, Thomas and Richard Rowney who had been trained in chemistry but manufactured perfumes and powders as well as artists' paints.⁶⁹ Extensive damage was incurred during German bombing raids

⁶⁴. It was apparently based on vinylites, like the early version of Politec. Later an acrylic-vinyl formula was adopted in the brand name lines called Polyflashe and Polyflashe Vasarely. These were copolymer paints, like Grumbacher's first version of Hyplar and the New Master's paints made by California Products. Danion (c. 1990-1992), pp. 79-83.

⁶⁵. Pre-war examples of experimentation with modern media (possibly synthetic) by artists based in France can be found but go beyond the scope of this study.

⁶⁶. The synthetic medium has been identified as a polyvinyl acetate formulated by Rhône-Poulenc Industries which was distributed under the name Rhodopas M. He later used Rhodopas MA. Mancusi-Ungaro, Carol C. "A Technical Note on IKB," *Yves Klein 1928-1962. A Retrospective*, Houston: Institute for the Arts, Rice University, 1982, pp. 258-259.

⁶⁷. He began using the term I.K.B. in around 1957 and obtained a patent for the paint formula (not the name of the colour) in May of 1960 (Patent no. 63471). Mancusi-Ungaro points out that the patent contains a technical error in the description of the medium, misidentifying a key ingredient. Stich, Sidra. *Yves Klein*, London: Hayward Gallery, 1995, especially p. 259, n. 95; and Mancusi-Ungaro (1982), p. 258.

⁶⁸. Danion (c. 1990-1992), p. 86 and Anonymous. "Brief History of George Rowney and Company Limited", n.d. in Ralph Mayer Papers, AAA, reel 211: 1288-1294.

⁶⁹. Anonymous. "Art Supplies Since 1789. Short History of the House of Rowney", *Art Material Trade News*, September, 1952, pp. 18-20; and Wraight, Robert. "Artists' Colormen 2. Rowney & Co.", *The Studio. International Art*. November 1962, vol. 164, No. 835, pp. 200-201.

of London in 1940 was not repaired until 1952 but the family-run business continued to prosper relying on a craftsman-like system of apprenticeship, even for family members.

Two other major British manufacturers of artists' color introduced synthetic artists' paints slightly later. Reeves, also an English family business founded in the 18th century (1766), was selling a line of water-based acrylics by 1966.⁷⁰ Winsor and Newton was later in its introduction of synthetic artists' paints but eventually offered several different lines of alkyds, acrylics and vinyls.⁷¹

Another relatively early manufacturer of synthetic colors was the Dutch company Royal Talens BV of Apeldoorn Holland, known simply as Talens in English. Talens was founded at the very end of the 19th century (1899) by a retired banker and amateur artist, Martin Talens.⁷² It grew into a huge multinational company with offices in 80 countries. The North American office was established by the founder's son in the New York area in 1906 and the company had such an important presence in the U.S. that it was represented on the standing committees of the recommended commercial standards for artists' oil paints in the 1940s-1960s. Talens was one of the earliest European-based companies to produce acrylics, if in fact it can be considered European at all. It brought out a line of water-borne acrylics using its brand name Rembrandt in late 1966 or early 1967.⁷³

⁷⁰. Anonymous. "Artists' Colormen 1. Reeves", *The Studio, International Art*. October 1962, vol. 164, No. 834, pp. 146-7; Gutiérrez and Roukes (1966), p. 102-103.

⁷¹. Dates were difficult to establish on these products due to organizational changes in the company at the time of the field work which meant that older employees were unavailable. The company had been purchased by a multi-national company called Col-Art which also purchased Lefranc and Bourgeois. Interview with Wendell Upchurch artist-consultant at Winsor and Newton's New York offices, May 17, 1994; Wraight, Robert. "Artists' Colormen 3. Winsor and Newton.", *The Studio, International Art*. December 1962, vol. 164, No. 836, pp. 240-243; and Anonymous. *The International Catalogue*, London: Winsor and Newton in Pinney Papers, Department of Conservation, National Gallery of Art, Washington, D.C..

⁷². Anonymous (marked with an illegible handwritten name followed by the words "Chief Chemist"). "History of Talens" single typed page, n.d. "Talens Correspondence File", Pinney Papers, National Gallery of Art, Washington, D.C.

⁷³. Gutiérrez and Roukes (1966), p. 110.

Just after the war British Intelligence investigated German artists' color manufacturers and visited seven companies collecting information about available supplies, manufacturing techniques, products and war damage.⁷⁴ Only two made high-quality artists' colours: H. Schmincke and Co. and the Dr. Fr. Schoenfeld Company (usually called Lukas, the first part of the company name). Both companies were established in the Düsseldorf area in the 19th-century but their premises had basically been destroyed during the war. Both had been founded by trained chemists and both began to distribute lines of water-borne acrylics in the late 1960s and early 1970s.

Lukas, named after the patron saint of painters, was founded in 1862 by Franz Schoenfeld. Schoenfeld had learned about artists and art materials from his father Stephan who ran a small art supply shop across from the academy of art in Düsseldorf.⁷⁵ Following the German tradition of travelling to different universities to study with experts Schoenfeld studied chemistry with some of the best known laboratory scientists of his time.⁷⁶ He earned a doctorate in chemistry and eventually returned home where he began to manufacture artists' colors, combining his long-standing interests in art and chemistry. The company later became known for graphics art supplies but continued to produce fine art colors.

Schmincke and Company has already been discussed in connection with its direct contributions to North American paintmaking when it sent a team of chemists to

⁷⁴ The companies included student-grade color manufacturers and are identified in the report as follows: "Schoenfeld of Düsseldorf, Schmincke of Düsseldorf, Redeker & Hennis of Nuremberg, G. Stotz of Nuremberg, Gunther Wagner, G. Siegle of Stuttgart and Marubwerke of Wurtenburg". British Intelligence Objectives Sub-Committee (reported by R.D.B. Woods, N.S.M. Atkinson and R.H. Harrison), *German Artists' Colour Manufacturers*, BIOS trip 2089, Final Report No. 712, Item No. 22, London: H.M. Stationary Office. n.d. (stamped "received/answered December 31 1946"), 9 page mimeograph in F. Weber and Company, Inc. Collection, *Getty Center for the History of Art and the Humanities*, Los Angeles, California.

⁷⁵ Anonymous, "125 Jahre Lukas Künstlerfarben" c. 1987 n.p. in Pinney Papers, Department of Conservation, National Gallery of Art, Washington, D.C.

⁷⁶ He studied with Justus Liebig in Giessen, Robert Bunsen in Heidelberg, and A.W. Williamson at the University of London.

help set up Grumbacher's New York-based paintmaking operation. The company was founded by two chemists who were brothers-in-law, Josef Horadam and Hermann Schmincke.⁷⁷ They initially manufactured ultramarine blue and made their name through production of a resin oil paint based on formulas which had been developed by Cesare Mussini, a professor at the Academy of Fine Arts in Florence, Italy.

In addition to these older well-established companies, there were smaller paintmakers who had set up businesses in the 20th century. For example the Italian company *Fratelli Maimeri* (Maimeri Brothers) which was established in 1927 by painter Gianni Maimeri and his chemist brother Carlo. It was completely destroyed during the war but subsequently rebuilt and by the early 1980s was exporting acrylics to the U.S.⁷⁸ A few years later, in 1933, a distributor of pigments and oils in Barcelona, Felipe Jaurena [sic] Setoain set up his company, MIR. The Spanish Civil War put an end to all activity but the company resumed paintmaking after the second world war and began expanding their products in the 1970s.⁷⁹

Also in the 1980s, a small Swiss company began North American distribution of high quality artists' acrylics called Lascaux. Lascaux is the name of a cave in the Dordogne embellished with what were considered some of the finest Ice Age paintings in Europe. The symbolism of the brand name was double-barrelled, conveying the notion of permanence and referring to wall painting. The company founder Alois K. Diethelm was the son of a decorative housepainter who wanted to become an artist but had to learn a trade.⁸⁰ Diethelm learned to make housepaints and then made fine-quality

⁷⁷. Interview with Peter Hesse, a family member and the fourth generation to head the company by Jan Marontate. June 1994; and Hesse, Peter. "Portrait of Our Firm of Artists' Colormen," *Schmincke Artists' Colours*, 95001 12.93/8e, Düsseldorf: Schmincke, 1993, pp. 3-6.

⁷⁸. They were distributed by Charvoz. *Charvoz (Catalogue)*, Printed in Italy. Studio Giovanna, 1982. Pinney Papers, National Gallery of Art, Washington, D.C..

⁷⁹. Anonymous. *A Company Dedicated Entirely to the Fine Arts* (brochure). Barcelona: MIR Jaurena. Copy of literature obtained courtesy Steve Steinberg, New York Central Art Supply, May 1995.

⁸⁰. Interview with Barbara Diethelm, daughter of the founder and head of the company at the time of

wallpaints for mural decorations. In the 1950s he sold his recipes for wallpaints to a larger company and founded a new company devoted to the manufacture of fine artists colors and paints for art conservation developed in collaboration with conservators.⁸¹ Diethelm had begun to experiment with formulas for synthetic artists' paints in the 1950s in consultation with friends who were mural painters.⁸² He apparently began developing custom acrylic paints for artists by about 1955 but did not make a full line until over a decade later.

New Paints in the Context of Non-Western Culture

World-wide there is a concentration of artists' color manufacturers in Europe because the type of paints used in so-called "international" art is in fact based on western European painting traditions. However, other paintmakers producing such media exist in Asia and Australia. Here an example from Australia will be considered because it illustrates the far-reaching implications of the manufacture and diffusion of synthetic media.

Australian paintmaker Jim Cobb, founder of Chroma Acrylics tested his experimental water-borne acrylics on a former engineer-turned-art instructor at the National Art School in Sydney in the early 1960s who promoted use of the new paints in art education.⁸³ Cobb's paints were soon used in abstract art made by Aborigines which was sold in high culture galleries in major cities throughout the world and

writing, by Jan Marontate, July 14, 1994.

⁸¹. The new company was established in about 1961 and the full company name is Alois K. Diethelm AG, Lascaux Farbenfabrik and it was situated in Brüttisellen, a suburb of Zurich at the time of the research.

⁸². Anonymous. "Lascaux Keeps Abreast of the Time", Brüttisellen: Alois K. Diethelm, n.d. an enclosure to a letter dated 10 November 1986 to Zora Pinney from Alois K. Diethelm, in "Lascaux-Diethelm Correspondence," Pinney Papers, National Gallery of Art, Washington.

⁸³. The artist was Tom Gleghorn, who became a prominent painter and a professor of art education. Anonymous. "The Self-Taught Artist Who Loves Paint as Much as Painting", Reprint from the *Australian Artist Magazine*, n.p. n.d. (c. 1985?) from "Chroma Acrylics", Pinney Papers, National Gallery of Art, Washington, D.C.

exhibited in museums.

In Australia the appropriation of synthetic media in the arts has been both controversial and rather unique because of its use in this Aboriginal art. The paintings are based on images which come out of traditional communal works of ephemeral art drawn in sand (and body painting). The designs used are abstract images passed from generation to generation. In about 1971, a white (non-Aboriginal) ex-art student from Sydney began to encourage members of an Aboriginal community in the Western Australian desert to make paintings with acrylic paints and canvas which he provided.⁸⁴ The large acrylic paintings produced were commonly called *Dreamings* (with reference to the traditional images and the rites associated with them).

The works were very successful in the art market, but raised far-ranging ethical and aesthetic issues. The designs carried with them intricate rules regarding who could see them, who could make them and who could comment on them. Some images could only be seen by a select group of adult men, others could be seen by any adult but their interpretation was reserved for elders and a final category of designs could be seen and understood by all.⁸⁵ (Thus Aboriginal traditions impinged even on the hallowed domain of Western customs of art criticism and art historical analysis). Some traditionalists viewed the production and subsequent sale of acrylic paintings of *Dreamings* as a sacrilege or at least as a distortion of a "primitive" cultural ritual, an inauthentic bastardization.⁸⁶ Not only were the images sold as lasting images to Westerners, they were in acrylics, a product of modern industrialized societies produced far from the remote regions inhabited by Aboriginals and the bright hues were unlike the traditional earth colours of the sand and body paints.

⁸⁴. His name was Geoff Bardon. The works were produced by two particular Aboriginal groups, the Yuendumu and Papunya. Rubinstein, Meyer Raphael. "Outstations of the Postmodern. Aboriginal Acrylic Painting of the Western Australian Desert", *Artsmagazine*. volume 63, March 1989, pp. 40-47.

⁸⁵. Rubinstein (1989), p. 43.. Rubinstein (1989), p. 43.

⁸⁶. Michaels (1994), p. 49.

The fact that the long-subjugated Aboriginal people, whose oppression had been justified in part by their lack of material culture, could win national art prizes and produce paintings which commanded high prices enraged white supremacists.⁸⁷ Art critics debated the place of the paintings, endeavoring to interpret the phenomenal popularity of the works in international art circles. The works were often painted following the collective process of the original sand-paintings and defied the European model of a single unique artist-creator. Defenders saw the Aboriginal painters' attempts to have their works acknowledged in the contemporary market as an authentic postmodern construction.⁸⁸ The enthusiastic reception of the acrylic paints by the Aboriginal artists and the subsequent reception of the paintings made with the paints raises complex issues about relations between art forms and new materials. This case does however indicate that by the 1970s acrylic paints were associated by gallery dealers and art collectors with high-culture art, not craft or folk cultures, since the Aboriginal paintings were controversial because of their positive reception by arbiters of elite tastes. Interestingly here the appropriation of synthetic media served as an instrument for the liberation of subjected native people. This recalls efforts half a century earlier by Mexican muralists and art educators to bring art to the people by developing new painting media in the first place. Here the presence of an Australian manufacturer of artists' quality synthetic paints was crucial, since cost and availability were key to this artistic phenomenon.

87. In 1919 Australian Aborigines were considered so bereft of cultural interest that they apparently were excluded from an exhibition of primitive art in Paris, qualified as "a people without art". Rubinstein, 1989, p. 44.

88. Michaels, Eric (foreword by Dick Hebdige and Introduction by Marcia Langton). "Western Desert Sandpainting and Postmodernism(1987)" and "Bad Aboriginal Art (1988)", *Bad Aboriginal Art. Tradition, Media, and Technological Horizons. Theory Out of Bounds 3*. Minneapolis: University of Minnesota, 1994, pp. 48-78 and 143-162.

Concluding Remarks: Company Histories, Social Identities and the Place of Paintmaking in Art

These short profiles of selected companies, though superficial, reveal certain general patterns regarding sources of inspiration and information as well as motivation. The importance of German connections to many early North American innovators with synthetic media is noteworthy and may in no small part be due to the presence of a large refugee population in the U.S. prior to World War II. Surprisingly, given the prevalence of the English language in North America, British paintmakers seem to have had less impact on paintmakers across the Atlantic in the 20th century. Perhaps the craft or guild mentality of English "colourmen" with their apprenticeship traditions lead them to greater secrecy and less sharing of technical information. No significant French connection has been found either. Several North American centers played prominent roles in the diffusion of knowledge and enthusiasm for new materials in North America: New York City, Boston and Mexico City. Contacts with sympathetic chemists and technical salespeople in chemical companies or in commercial painting firms was also frequently cited by artists' paintmakers as crucial for their work with synthetic media.

As regards motivation, the profiles of paintmakers show that accounts of company history by members of the company and in trade literature emphasize interests in art and chemical training as key features in their founders' decisions to undertake paintmaking.

Many of the paintmakers appear to have endeavored to develop artistic careers prior to beginning to make artists' colours, and may be at least considered amateur artists (or perhaps more pessimistically "failed painters").⁸⁹ Most of the earliest innovators in the development of synthetic painting media for artists were connected to art communities through friendships, activities, and interests prior to beginning to make

⁸⁹ In a discussion of various forms of artistic failure Heinrich has classified as most serious the lack of recognition as an artist, which she terms the "scandal of silence". Heinrich, Nathalie. "La faute, l'erreur, l'échec", in *Sociologie de l'Art*, No. 7, 1994, pp.11-26.

artists' colors, a pattern observed already in the life stories of pioneer paintmakers Len Bocour and José Gutiérrez. Even paintmakers reluctant to share their artistic inclinations publicly often express an almost mystical attraction to making paint for artists, as Luis Miró revealed. Miró has directed operations at the Politec firm in Mexico City since 1960, when he became Gutiérrez' partner. In interview he resolutely insisted that he was only a businessman, not an artist. Asked at the end of the interview why had he had financed artists' paintmaking and not invested in some other sort of business Miró smiled and said with quiet reverence:

*"Me gusta la idea [I love the idea]"*⁹⁰

Thus by their own accounts artists' paintmaking firms are not just commercial enterprises but often are founded by individuals with complex motivations involving a special personal commitment to art.

However a second type of paintmaker emerges, particularly in the stories about companies founded before the 20th century (such as the Weber, Schmincke, Lukas, and Rowney firms). These paintmakers have backgrounds which resemble Henry Levison's itinerary: that of trained chemists with a love of science and a bit of entrepreneurial spirit yearning for technical challenges. Other shared characteristics emerge, for example, several companies flourished under the direction of two-person teams of relatives (notably Uncle Bocour and nephew Golden, the Levison Brothers, the Rowney Brothers, the Maimeri brothers, and brothers-in-law Schmincke and Horadam).

As well a clear distinction appears between companies still run by founders (or their families), and companies which have become part of larger corporations governed by profit motives alone. This impression that large art materials manufacturers are different may in part be a by-product of lack of information. Nonetheless, companies owned by large corporations frequently had trouble fielding questions about the

⁹⁰ Interview with Luis Miró by Jan Marontate, June 1994.

company history, and one suspects that this inaccessibility might also affect interaction with artists with technical queries, thus having an impact on the place of the paintmaking company in artmaking.

The general patterns observed suggest that the paintmakers who created early lines of synthetic paints may be considered an avant-garde indicative of an emerging trend in the context of artists' paintmaking, yet not exceptional people in the sense of being totally outside the usual range of types of paintmakers. Though special by virtue of early innovations, and because of particular individual talents, pioneer paintmakers do not appear to have been unusual within the occupational group. Indeed, a combination of entrepreneurship, an enthusiasm for instrumental knowledge, unconventional tastes and distinctive individual characteristics are as much marks of "typical" modern paintmakers as they are of successful modern artists. As Heinrich has pointed out, the notion of an artistic career in the 20th century is a study in contradictions since artistic success does not imply conformity to rules of the trade but rather success is linked to the recognition of the artists for a new approach which becomes a model for others.⁹¹ Similarly many of the stories of paintmakers tell of colorful lives and creative urges which transcend the ordinary and provide inspirations for others in the occupation.

All in all, it seems that the manufacture of artists' paints is almost as dependent on a charismatic leader (or related team) as is the creation of art itself. Yet, profiles of companies tend to depict paintmakers as facilitators for artmaking. There a sense of cautious distance, and workmanlike practicality in discourse about the place of paintmakers in art. Few go so far as to assert themselves as having a direct influence on particular artists. Rather stories emphasize that artists have inspired paintmakers. Is

⁹¹. Heinrich, Nathalie. "Peut-on parler de carrières d'artistes? Un bref historique des formes de la réussite artistique", *Cahiers de recherche sociologique*, no. 16, Printemps, 1991, pp. 43-54.

this submissive stance before the artist merely a form of subservient flattery of a customer? Perhaps not. Although the habit of listing the names of well-known artists who have used products may be viewed as pure salesmanship, the proud sense of accomplishment expressed by paintmakers in the use of their products by artists often appears to go beyond simple commercialism. Many paintmakers appear to express almost a sense of indebtedness to artists for completing the creative process which they, as manufacturers of artists' paints, engage in when they mix colors. Stories indicate that for many paintmakers, their appropriation of technical skills to make media for artists is embedded in a deeper desire to participate in artmaking, a desire which is intrinsic to their presentation of self and their sense of social identity. From this perspective artists can be seen both as an audience (for the paints) and as participants in the process of validation of the paintmaker's contribution to culture. By creating works of art, painters launch a new process of reception of the fruits of the paintmaker's labours.

CHAPTER 8 – Art in the High Culture Model and Synthetic Media: Early Users of Acrylic Paints on the Place of Materials in Artistic Practice

-- Acrylic paints for artists were used by many highly successful artists consecrated by the international art market.¹ In this context the new media took on profoundly different symbolic associations than in the socialist interpretations of Mexican muralists or the populist discourse of American regionalists during the New Deal art projects. This section presents the views of selected artists on the subject of materials and techniques, especially synthetic media. Here the focus is on highly visible artists who were early users of acrylic paints made especially for artists and who had early successes with paintings made with the new media in the 1950s and early 1960s. Other artists have been considered elsewhere but this section presents testimony by key figures who reached a wide audience due to their recognition in high culture circles (and by the art market) in the 1950s, 1960s and 1970s. The artists were chosen from a list of painters named by paintmakers as prominent users of acrylics during this time.²

The artists' views were solicited in oral history interviews conducted for this project. The interviews took the form of "life stories", focussing on chronological accounts of the artists' studio practices, use of materials and attitudes towards materials and techniques. First the artists were asked to give an account of their artistic

¹. As we have mentioned elsewhere Len Bocour and Sam Golden of the New York-based company Bocour Artist Colors apparently developed the first line of acrylic resin paints (which were compatible with oils and turpentine) in the late 1940s and gave them to selected artists to try. They were called *Magna* and appear to have been distributed by 1953. In 1954 Henry Levison of Permanent Pigments in Cincinnati brought out the first full line of water-borne artists' acrylics (also commonly referred to by artists as polymer or acrylic emulsion paints). José Gutiérrez who later founded the paintmaking company Politec and Norman and Harold Gulamerian of Utrecht Canvas Company were involved with developing water-borne synthetic paints in the 1950s. Ron Hayes developed the New Masters line in the early 1960s. Some larger established manufacturers began to produce acrylic products (like gessos) but none appear to have brought out full lines of acrylic emulsion paints until after the innovative efforts of small entrepreneurial paintmakers.

². The criteria used for the selection of the artists have been presented in more detail in the methodological section.

practices, tracing their use of various media from their earliest recollections in childhood to the present. They were asked for detailed information on what materials they had used (including brand names, dates and sources), and how they had learned about them. They were asked to comment on their relationships with teachers, colleagues, paintmakers and suppliers of materials. A second level of questions dealt with the relationship between materials and their art. They were encouraged to discuss the characteristics and choice of materials in their work at specific moments in the past. Finally, the artists were asked to comment on their views about more general relations between technique and art, in particular on the tension between technical innovation and artistic tradition. They were also asked their views on the relations between painting as a creative/intellectual activity and the notion of craftsmanship (or of painting as a manual activity).

Each artist's testimony took a different form, depending on their particular itinerary and views. Since the artists are all well-known figures they were all experienced interviewees with certain set notions about their own presentation of self and way of talking about their work. In many cases they repeated ideas that they had expressed elsewhere to give a picture of their history.³ The interviews conducted for this project fulfill the function of prompting discussion about the particular topic of synthetic painting media and related technical matters at a specific moment in history, filling in gaps about what is known about the artists' practices and beliefs. However the artists often referred to past interviews or publications for amplifications of their ideas.

³. Sometimes the artists would point out that they had were referring to statements they had made before, but not always. It was at first somewhat disconcerting to realize after transcribing the interviews and selecting quotes that the most eloquently stated remarks were often almost *verbatim* renditions of statements made in previously published interviews. A question then arises : Does the fact that the artists had thought about these matters before and formed a view on them lessen their authenticity? Does it matter whether these statements are taken as public pronouncements rather than intimate reflections? In the case of well-known artists separating the public and private spheres may be artificial. The accounts given in the interviews are seen here as indicators of the way the artist presented concerns about materials and techniques in a specific socio-historic context.

Therefore written sources have been consulted and used too in the analytic summary which follows.

The analysis presented here treats the principal themes raised by the artists about their thoughts on materials at the time of the interview. It does not report the complete detailed history of each artist's use of materials because the point here is to try to understand the use of synthetic media in the context of artistic discourse more generally. Critics and curators were actively engaged in establishing the reputations of these painters, in particular the first painters treated: Kenneth Noland, Jules Olitski, and Larry Poons. These three painters were associated with the reaction to abstract expressionism which came to be known as "post-painterly abstraction".⁴ Hence, the critic Clement Greenberg, who coined the term and who was a central figure in the recognition of these painters, will be considered in this connection as will his possible contributions to the diffusion of information about synthetic painting media.⁵ Next, pop artist Roy Lichtenstein, who developed a signature style exploiting the characteristics of the acrylic resin paint Magna will be presented. Three Quebec painters who were engaged in "hard-edge" abstraction will be considered: Yves Gaucher, and two "*nouveaux*

⁴ This term refers specifically to Swiss scholar Heinrich Wölfflin's idea of a "painterly" (*malerisch* in German) and a contrasting linear style in art. In his view these styles refer to two different conceptions of the world. He proposed that the evolution of artistic styles could be partly characterized as an oscillation between these two opposing modes. According to him painterly pictures are tactile and visual, whereas linear art uses draughtmanship and boundaries to obtain the impression of plasticity. Clement Greenberg categorized the work of abstract expressionists, in particular Pollock, as painterly. After Pollock's rise to prominence, Louis, Frankenthaler, Noland and others abstract artists eschewed the pronounced gestural effects of Pollock for flat areas of relatively unmodulated colour whence Greenberg's clever moniker.

⁵ Greenberg wrote an introductory essay on the term for the catalogue of a 1964 group show of painters working in this vein. Although by no means exhaustive, the list of Canadian and American artists chosen included: Walter Darby Bannard, George Bireline, Jack Bush, Gene Davis, Ernest Dieringer, Thomas Downing, Ralph DuCasse, Friedel Dzubas, Paul Feeley, John Ferren, Sam Francis, Helen Frankenthaler, Frank Hamilton, Al Held, Alfred Jensen, Ellsworth Kelly, Nicholas Krushenick, Alexander Liberman, Kenneth Lochhead, Morris Louis, A.F. McKay, Howard Mehring, Kenneth Noland, Jules Olitski, Raymond Parker, Ludwig Sander, David Simpson, Albert Stadler, Frank Stella, Mason Wells, and Emerson Woelffer. *Post Painterly Abstraction*. Los Angeles: Los Angeles County Museum of Art and Contemporary Art Council, 1964.

plasticiens ", Guido Molinari and Claude Toussignant.⁶ Finally Canadian realist Alex Colville provides another perspective on the new media and the place of materials in artistic practice. Taken together their testimony provides insights into artistic discourse and practices relevant to the appropriation of synthetic media by "advanced" artists in North American in the late 1950s and 1960s.⁷

Whatever the interpretation of the conditions and meanings of their success, the artists included in this section attained widespread recognition as members of an elite in the high-culture model. They also were early innovators in their use of synthetic materials. Inadvertently, their use of the new media became a sort of endorsement of synthetic paints, at least in the representations of paintmakers. As indicated in discussions of paintmakers, some prominent avant-garde artists had direct input into the development of specific new materials (such as Frankenthaler, Louis, and Noland) and the materials themselves became intimately connected to discourse about some of the artists' work. This section will not focus on the relations between artists and paintmakers.⁸ Instead it emphasizes more general issues raised by the artists about the place of materials, particularly synthetic paints, in their work.

Critical Discourse as a Context for the New Media

In order to understand the symbolic associations of the new media in context, the meanings and metaphors of the art created with them must be considered. Most of the artists considered in this section are associated with the emergence of American

⁶. Other members of the group of Montreal painters formed in 1959 known as "nouveau plasticiens" include Jean Goguen (1928-), and Denis Juneau (1925-).

⁷. Critics working in the Greenbergian optic like Michael Fried often used the term "advanced" to refer to practitioners or supporters of modernist aesthetics in painting. See for example : Fried, Michael. *Three American Painters. Kenneth Noland, Jules Olitski. Frank Stella*. Boston: Fogg Art Museum and Garland Publishing, 1965, p. 33.

⁸. For example, specific instances of requests for custom-made art materials mentioned in the interviews will not all be repeated.

post-painterly abstraction (Kenneth Noland, Jules Olitski and Larry Poons) and concomitant Canadian forms of painting (Yves Gaucher, Guido Molinari and Claude Toussignant). Their work during the late 1950s and early 1960s was seen by critics as a reaction against the attitudes of "painterly" abstraction (evident in abstract expressionism and *automatisme*). They have in common the use of high-keyed, clear colours and anonymous execution (which eliminated gestural paint handling), often with geometric forms.

The emergence of abstract painting in the two decades after the war as a powerful force in North American art coincided with the development of acrylic paints for artists. The materials and techniques used in abstract painting came under much scrutiny, particularly by opponents of non-representational art who sometimes accused abstract artists of technical incompetence. The defence of American abstract painting and its techniques took varied courses. Two important lines of reasoning for artistic discourse were developed by critics Harold Rosenberg and Clement Greenberg.⁹ One reading, spearheaded by Harold Rosenberg, portrayed the new art as a manifestation of creative self-discovery by artist-visionaries.¹⁰ Another approach, articulated by Greenberg, interpreted modern art as following an inner artistic logic decipherable with the aid of formalist aesthetics. Greenberg's formalism assumed a "transpersonal, transcultural and transhistorical consistency in communication and expression through visual forms".¹¹ Greenberg built on the Hegelian conception of art history using

⁹. The two critics had very different tastes in art and artists. They both provided lively insightful analysis of abstract expressionism from different points of view. In assessments of subsequent avant-garde art their differences became more pronounced. Rosenberg drew upon psychological and existentialist notions, whereas Greenberg focussed on what has been termed "design" elements. For a comparison of the two in the context of the critical reception of Pop Art see Dubreuil-Blondin, Nicole. "Le Contexte Critique", *La fonction critique dans le Pop Art américain*, Montreal: Presses de l'Université de Montréal, 1980, pp. 17-50.

¹⁰. See for example Rosenberg, Harold. *The Anxious Object. Art Today and its Audience*. New York: Horizon Press, 1964; and Rosenberg, Harold. *Artworks and Packages*. New York: Horizon Press, 1969.

¹¹. Leja, Michael. *Reframing Abstract Expressionism*. New Haven: Yale University Press, 1993.

elements for the formal analysis of stylistic evolution proposed by Swiss scholar Heinrich Wölfflin.¹² He also drew on the work of English critics Clive Bell and Roger Fry. Greenberg worked to establish the position of American (and to some extent Canadian) abstraction in the canons of western art history on the basis of what might be described as positivist assumptions about progress and measures of quality.¹³

Greenberg's work will be discussed further below in connection with his relations to artists and attitudes to new media since he was very close to several of the artists interviewed. Subsequent scholarship has widely criticized the hegemonic, positivist aspect of his approach since the reception of any art form is now widely seen to be historically and socially contingent on the context of its production and reception.¹⁴

Scholars now generally agree that aesthetics alone cannot account for the rise to prominence of a New York-centered elite of North American artists in the 1950s and 1960s. Yet, there is no consensus on the basis for the success of any of the various types of American avant-garde painting in international art circles after World War II. In one highly controversial interpretation, cultural historian Serge Guilbaut sees New York abstract and pop painting as an embodiment of liberal-democratic ideology used in

especially "Jackson Pollock and the Unconscious" p. 317.

¹² Wölfflin had developed five pairs of concepts for using in studying and comparing what he called "units of style" in history. They were: linear and painterly (in the path of vision following in reading the painting), plane and recession (having to do with the illusion of depth or flatness), closed and open form (in the composition), multiplicity and unity (in the composition), clearness and unclearness (of the subject). Wölfflin, Heinrich (trans. M.D. Hottinger). *Principles of Art History. The Problem of the Development of Style in Later Art*. New York: Dover, 1950 reprint of 1932 translation. The English translation was based on the 7th edition of the work. The first edition appeared in 1915.

¹³ A meticulously-prepared collection of Greenberg's writings has recently been published: O'Brian, John (editor). *Clement Greenberg. The Collected Essays and Criticism*. Volumes 1-4. Chicago: University of Chicago Press, 1993.

¹⁴ Akrich has shows how variations in the reception of an art object event occur with the same cultural framework in a short period of time in the study of an altarpiece. However, more far-reaching implications of relativism are explored within the Marxist framework by Woolf and in specific applications by Clark. See for example: Akrich, Madeleine. "'Le jugement dernier': Une sociologie de la beauté", *Année sociologique*, volume 36, 1986, pp. 239-277; Wolff, Janet. *The Social Production of Art*. London: MacMillan Education, 1981; Clark, Timothy J. *The Painting of Modern Life*. New York: Alfred A. Knopf, 1984.

Cold War propaganda abroad by U.S. imperialists.¹⁵ An alternative but complementary reading by art historian Michael Leja sees the production and reception of the New York School as embedded in ideas about subjectivity and consciousness in American society which were grounded in discourse about the power of the irrationality and primitive instincts for "the Modern Man".¹⁶

Regardless of formalism's disrepute in the field of contemporary art history and cultural studies, sociologically and historically formalist discourse cannot be ignored in the study of the reception of synthetic paints since much of the highly successful art which used the new paints was consecrated by partisans of formalist aesthetics, notably Greenberg himself.

Critical Reception of the New Media: the Case of Clement Greenberg's Modernism

Although critic Clement Greenberg's (1909-1994) assumptions and value-judgements have been called into question, his ideas had a central place in high culture discourse about American painting during the early 1960s.¹⁷ Numerous painters who were early users of acrylic paints were close to Greenberg, an important spokesman for abstract painting in the 1960s.¹⁸ Greenberg's intimacy with artists led them to discuss a

¹⁵. Guilbaut, Serge. (trans. Arthur Goldhammer). *How New York Stole the Idea of Modern Art. Abstract Expressionism, Freedom, and the Cold War*. Chicago: University of Chicago Press, 1983; and Guilbaut, Serge (editor). *Reconstructing Modernism. Art in New York, Paris and Montreal, 1945-1964*. Cambridge, Massachusetts: MIT Press, 1991.

¹⁶. Leja has pointed to a fascination with primitivism and irrationality in dominant post-war culture in the U.S. as intimately connected to the rise of Abstract Expressionists as the first highly successful group of nonfigurative painters in the U.S.. Leja 1993.

¹⁷. For selected themes in the debates about Greenbergian modernism see: Clark, T.J. "Clement Greenberg's Theory of Art", *Critical Inquiry*, September 1982, vol. 9, no. 1, pp. 139-156; Fried, Michael. "How Modernism Works: A Response to T.J. Clark", *Critical Inquiry*, September 1982, vol. 9, no. 1, pp. 217-234; and "Clark, T. J. "Arguments about Modernism: A Reply to Michael Fried" in Mitchell, W.J.T.(editor). *The Politics of Interpretation*. Chicago: University of Chicago Press, 1983, pp. 239-248.

¹⁸. Unfortunately Greenberg died during the research for this project before the author was able to arrange an interview. He had given written permission for consultation of his papers for preliminary research for this project in November 1993. Postcard from Clement Greenberg to Jan Marontate,

wide range of issues with him from highly abstract conceptual notions to very visceral aspects of studio practices. There is some circumstantial evidence to indicate that he may have discussed the early acrylic paints for artists with some painters. He was certainly a social catalyst, promoting contacts between artists who he felt would find each other's work stimulating and exchange ideas, for example by taking Louis and Noland to visit Frankenthaler in her studio. He had important contacts with dealers and curated numerous exhibitions.

Many artists found in Greenberg not just a gatekeeper or a mediator in the reception of their work but a mentor. Noland described Greenberg as a deeply thought-provoking participant in the development of his art, commenting that :

"he's not always telling you something that makes you comfortable to hear. If for whatever reason you're vague about something you're doing, or are not being relevant or something like that, he'll point that out . . . He's been accused of telling people how to paint. But of course his record itself cancels that out for the very simple reason that the kind of art that he's thought to be the best art is not necessarily alike. . . Each artist is somehow uniquely different. . . So it's not as if he tells anybody the way they should paint or anything that they should do . He doesn't do that. He has the ability to look at the work in its own terms"¹⁹

Greenberg's Impact on Artistic Discourse Related to Painting Materials

Greenberg placed an "inner artistic logic" at the center of the historical development of art.²⁰ He introduced aesthetic judgement emanating from the experience of artists and viewers into a Marxist framework of historical change associated with the struggle for transformation and renewal within all disciplines in modern society. In Greenberg's view of modernism, aesthetic judgements were

November 29, 1993.

¹⁹. Interview with Kenneth Noland by Paul Cummings, December 9, 1971. AAA, transcript pp. . p. 37.

²⁰. This was used in a somewhat disparaging way by Kramer in a review of a collection of Greenberg's essays called *Art and Culture*. Kramer, Hilton. "A Critic on the Side of History: Notes on Clement Greenberg" *Arts*, XXXVII, no. 1, -pp. 60-63; and Greenberg Clement. *Art and Culture. Critical Essays*. Boston: Beacon Press. 1965.

"objective", art was autonomous and "substantive change is seen as technical change with respect to other art."²¹ His adaptation of Wölfflinian formalist notions to abstract painting had a profound effect on the construction of discourse about modern American painting especially for color field painters.²²

A striking aspect of Greenberg's influence was his break from New World parochialism and his insistence on the central place of modern American painting in the canons of art history. He saw modern American painting as equal to what he considered the best in the history of Western art. This had far-ranging consequences for how artists began to talk about their work. For example, building on Greenberg's ideas and other theories, American artists re-interpreted their own work with reference to centuries-old debates in the arts. One debate which had been very actively pursued in 18th-century France concerned the characteristics and relative merits of different art forms (painting, sculpture, architecture). In the past French painters had defended their place in the French Academy by arguing that painting was an inherently intellectual pursuit due to the technical complexity of depicting three-dimensional space in two dimensions, therefore worthy for inclusion in the "liberal professions".²³ The issue of disciplinarity had been raised by Cubism, surrealism and dada. By the middle of the 20th century the question of disciplinary boundaries was an important topic in American art criticism and scholarship. Greenberg depicted the modern tendency within the arts as being towards increasing specialization of each discipline within its own area of competence. One argument regarding the purview of painting, supported by Greenberg,

²¹ Harrison, Charles. "Modernism and the 'Transatlantic dialogue'", in Francina, Francis (editor). *Pollock and After: The Critical Debate*. New York: Harper and Row, 1985, pp.

²² For a defense of Greenberg's position and an eloquent example of the application of formalist criticism in the construction of artistic reputations see the catalogue of a ground-breaking exhibition: Fried, Michael. *Three American Painters. Kenneth Noland, Jules Olitski, Frank Stella*. Boston: Fogg Art Museum and Garland Publishing, 1965.

²³ Heinich, Nathalie. "Arts et Sciences à l'âge classique", *Actes de la recherche en sciences sociales*, No. 67/68, mars 1987, p. 50 and Heinich, Nathalie. *Du Peintre à l'artiste. Artisans et académiciens à l'âge classique*. Paris: Minuit, 1993.

proposed that rather than compete with sculpture and architecture in depicting or creating three-dimensional space, painting should affirm the two-dimensionality of the picture plane by avoiding the illusion of depth. In other words, what painting shares with no other art form is its flatness, therefore modern painting could be judged on the basis of how it came to terms with the issues of depth and flatness. This was a particular theme in approaches to post-painterly abstraction which emerged in the 1950s. For example, discussing his paintings of that time, Frank Stella who was at that time a very young artist championed by Greenberg, maintained

"I felt that flatness was just an absolute necessity for modern painting at the time . . . I already had an idea of the kind of paint I wanted to use . . . metallic paint . . . these are hard paintings to penetrate -- all of the action is on the surface. They are not so much an invitation as a presentation. . . One of the things that you can say about my painting-- and I suppose that it's a good thing-- is that it's not immediately apparent how they're done . . . the first thing you do is see it, and not see how it's done"²⁴

The defence of "flatness" is socially significant because it illustrates the transformation of artistic concerns from the socially-oriented communitarian discourse of the 1930s. Here formal, physical qualities of art objects take on philosophical connotation in a conception of artmaking that connects modern artists to all of western art history.

In this Greenbergian perspective, materials matter, since the formal qualities of the work are determined by the suitability of artists' techniques and materials for rendering artistic visions. Indeed this interest in the process of painting rather than narratives about content and iconography was one of the complaints of anti-formalists in the mid-1970s:

"the formalists were bashed for writing mere description-- pruning the process of painting to an account of how it was done. . . but failing to tell us what the picture is about"²⁵

²⁴ Frank Stella in *Painters Painting: The New York Art Scene, 1940-70*, bw and colour, dir. and Prod. Emile de Antonio with Mary Lampson, Turin Film Corp., 116 minutes.

²⁵ Robbins, Daniel. "Larry Poons;: Creation of the Complex Surface", in *Larry Poons. Paintings 1963-1990*. New York: Salander'O'Reilly Galleries, pp. 9-19, esp. p. 11. For a criticism of formalism see: Bowling, Frank. "Problems of Criticism I-II-III-IV-V-VI", *Arts Magazine*, May 1972, p. 35 ff.

Greenberg's approach to ways of thinking about painting was so wide-ranging that to speak of his possible influence on materials and technique may appear to border on reductionism because materials are so concrete compared to the conceptual notions which abound in his work. Yet Greenberg sometimes included a critical appraisal of the actual manipulation of materials in his analysis of art. His comments about the use of materials (in particular acrylic paints) for the visual effects achieved in color field painting have been mentioned in connection with the work of Noland and Louis.²⁶

Greenberg, the Diffusion of Information about Acrylics in the Arts and Critical Reception of Early Acrylic Paintings

Circumstantial evidence indicates the possibility that Greenberg may also have contributed to the diffusion of technical information amongst artists, in particular information about new acrylic paints for artists. A number of artists appeared to have adopted acrylics as their principle medium after visiting with Greenberg, notably Morris Louis and Jack Bush. Questioned forty years later on whether Greenberg might have discussed their actual choice of media with them in the 1950s, Noland and his contemporary Jules Olitski did not recall any specific instances but remarked that it was plausible that they might have discussed the new paints.²⁷

Certainly many of the artists Greenberg championed in the late 1950s and early 1960s were early users of acrylic paints. This may be coincidental. Greenberg may have simply responded favourably to the lively colours and handling properties of the new media. Or the artists involved might have discussed materials and techniques independent of Greenberg.

However, the case of Greenberg's relations with Canadian painter Jack Bush (1909-1977) gives some indication that critical reactions to effects achieved using new

²⁶. See for example, Greenberg, Clement 1960, pp. 26-29.

²⁷. Interviews with Jules Olitski and Kenneth Noland by Jan Marontate, 1994.

synthetic paints may have been a factor in their use. At his first meeting with the critic Clement Greenberg in 1956, Greenberg advised Bush to paint flatter, with thinner paint.²⁸ Shortly after this meeting, Bush started using Bocour's "soupy" acrylic resin paints (Magna) producing large areas of lively color in thick layers²⁹ in the *Thrust* series. This was seen as a breakthrough in his work:

"When after 1957 he increasingly opted for the thinner paint surfaces and more open layouts typical of Post-painterly Abstraction, Bush was able to make a very personal and richly varied contribution to what in retrospect seems the best art done anywhere since the mid 1950s".³⁰

Some critics were suspicious about the intensity of the acrylic colors and the impact of the new media:

"In many Thrust pictures Jack used Magna paint and it seems that he couldn't quite control the color at least in the brighter range. . . . Somewhat later Bush started toning down and softening the pictures by using thinner color and earth tones. . .".³¹

While it may be coincidental that Bush (as well as Morris Louis) adopted Magna after meeting with Greenberg, it is important to note that some of the properties of the new media were noticed by critics and appraisals of the new media appeared in publications about art. As a rule, this attention to concrete aspects of paintings was embedded in broader discussions about art making and aesthetics, notably in debating formalist issues raised by the new color field painters.

Kenneth Noland: Materials as the Subject of Abstract Painting

Acrylic paints were widely used in the color field painting of Morris Louis and Kenneth Noland (b. 1924) beginning in earnest about 1954. Louis' and Noland's early work with acrylic resin paints (Magna) has been discussed in connection with Bocour

28. Wilkin, Karen. "Chronology" in *Jack Bush*, New York: Hudson Hills Press, 1984, p.203.

29. Bush was a client of Bocour Artist Colors. Golden 1991 and Gollin, Jane. "New Media Inspire Artists", *Art Voices* Volume 4, Number 3, Summer 1965, pp. 48-50.

30. Carpenter, Ken. "Triumph over Adversity", in Wilkin, Karen(editor) "Chronology", *Jack Bush*, New York: Hudson Hills Press, 1984, p. 84.

31. Moffett, Kenworth. "Jack Bush in Retrospect" in Wilkin, Karen, 1984,p. 34.

and Golden's introduction of the new paints. They were associated with a grouping of artists that came to be known as the "Washington Color Painters," an important contingent of colour field painters in the late 1950s and early 1960s.³² Other prominent color field painters working elsewhere in the 1950s included Helen Frankenthaler, Freidel Dzubas, Jules Olitski and Larry Poons.

Noland's background was quite different from Louis'. Raised in North Carolina, he served in the armed forces during World War II. Then, taking advantage of the G.I. Bill, he enrolled as an art student at Black Mountain College in 1946. There he came into contact with many visiting artists and critics, including critic Clement Greenberg, and painter Helen Frankenthaler.³³ Among his professors were two influential practitioners and theoreticians of abstract art and colour: the constructivist Ilya Bolotowsky and Joseph Albers.³⁴ He also studied in Paris with sculptor Ossip Zadkine. In Washington during the 1950s he worked closely with Morris Louis, formulating what they believed to be central issues for the course of abstract painting.³⁵ After they began to produce large colourful canvases using artists' acrylic resin paints in the mid-fifties the look of their work changed dramatically. Clement Greenberg, who became a close friend of both painters, saw in this work a crucial revelation that "had to do with facture", that is with the materials and means of making paintings which engulfed the

³². The title originated from an exhibition of the same name at the Washington Gallery of Modern Art in 1965. In addition to Louis and Noland, other painters included in the grouping were Howard Mehring, Gene Davis, and Thomas Downing. A later exhibition expanded the list of artists involved with this approach to painting, adding the following: Leon Berkowitz, Enid Cafritz, William Christenberry, William Dutterer, Sam Gilliam, Ed McGowin Robert W. Newmann, V.V. Rankine, Paul Reed, Carroll Sockwell, Alma Thomas, Elliott Thompson, Michael Vinson-Clark and Ken Wade. *The Washington Painters*. Sarasota, Florida: Ringling Museum of Art, 1969.

³³. Other prominent figures who he met there were Elaine and Willem de Kooning, Theodoros Stamos, architect-visionary Buckminster Fuller and experimental musician and composer John Cage. Moffett 1977, pp. 2

³⁴. The degree to which Albers' theories of colour may have influenced Noland is controversial. Noland studied Albers' theories but dropped his course after one term because of mutual animosity. Moffett 1977, p. 15.

³⁵. As we have commented earlier their collaboration was especially intense after Clement Greenberg took them to visit Helen Frankenthaler's studio in 1953 and see her new stain paintings.

viewer's visual field.³⁶ Noland moved north to teach at Bennington College in Vermont and set up a New York studio.

... Noland's views on materials and painting provide insights into ways of thinking about relationships between artistic discourse and the new media. Yet, in his case the connection between his art and his use of synthetic media more complex than in Louis' case, in part because of Louis' untimely death, in part because of Noland's complex psychoanalytical approach to cognitive aspects of his artmaking.³⁷ Yet, Noland has proposed a strong relationship between the emergence of color field painting and the properties of synthetic media.

"Materiality" and the New Abstraction

Overall, Noland has maintained that an enthusiasm for what he calls the "stuff" of painting was essential for the development of new abstraction in the 1950s. Noland cited two principal sources for the new approach to painting he began to develop in the 1950s: the surrealists and the action painters (particularly Jackson Pollock). In his view the surrealists contributed an open, experimental approach associated with accident or chance and the suspension of received notions about tastes. He credited Jackson Pollock (1912-1956) with opening up a new approach to painting by pioneering a direct physical approach to the materials of painting and to the relationships which formed working with materials:

"Pollock made all things about the picture, all the *stuff*, actual. Taking the canvas off the stretcher, putting it on the floor, made it more real. Mixing up different kinds of paint, getting it to stain in, was getting at a kind of materiality."³⁸

36. Greenberg, Clement. "Louis and Noland", *Art International*. Vol. IV/5, May 25, 1960, pp. 26-29.

37. He started psychoanalytic therapy with Wilhelm Reich in Washington. He had switched from Reichian to Sullivanian psychoanalysis by the early 1970s. Noland and Cummings interview, pp. 18-21.

38. Noland cited in Wilken, Karen. *Kenneth Noland*. New York: Rizzoli, 1990, p. 14.

This "materiality" makes actual tools and paints central to the experience of the new way of painting which Noland championed, seeing himself as a successor to Pollock and Matisse:

"The allusions began to be more towards what the painting was made of, how it was made . . . Morris Louis and I were interested in how Pollock and Helen Frankenthaler were using paint. Of necessity we had to get more interested in the stuff of painting."³⁹

In the late 1940s Pollock had emerged as a leading figure in abstract expressionism or action painting.⁴⁰ Pollock advocated the use of new techniques to create new art but emphasized that "technique is simply a way to arrive at a declaration".⁴¹ Pollock was a former student of Thomas Hart Benton. His participation in Siqueiros' New York Experimental Workshop in 1937 has been discussed earlier. Pollock was, like Siqueiros, an ardent user of automotive-type lacquers like the pyroxylin paint Duco and wildly experimental techniques of application. He placed large canvases on the floor or propped them on a wall, rather than on an easel. Pollock dripped and splashed and spread paint with various implements in what came to be called an "all-over" or gestural way of painting which was emulated by many younger artists beginning in the late forties and early fifties (See Figure 10). As they had done with the famous artist Pablo Picasso, filmmakers tried to capture the energy of creativity by filming Pollock actively, viscerally engaged in the process of painting. His image as the personification of the tormented, visionary *artiste maudit* made him almost a cult figure for younger painters of Noland's generation.

³⁹ *ibid.*

⁴⁰ For two very different accounts of reception of Pollock's work and its relation to the socio-historical context, one emphasizing its place in the liberal-democratic discourse surrounding U.S. Cold War propaganda, the other pointing to its embeddedness in discourse about the "Modern Man", see: Guilbaut 1983; and Leja 1993, especially "Jackson Pollock and the Unconscious" pp. 121-202.

⁴¹ A statement by Jackson Pollock from the narration by the artists for the film *Jackson Pollock* (1951) by Hans Namuth and Paul Falkenberg, quoted in Chipp, Herschel B. with Peter Selz and Joshua C. Taylor (editors). *Theories of Modern Art: A Source Book by Artists and Critics*, Berkeley : University of California, 1968, p. 548.

Noland's belief that art comes from the process of working with materials goes to the very core of his sense of artistic identity. In his words: "artists are involved with the *means* of creativity, the nature of skill, the revelation of making".⁴² For him, experimenting with new media, like state-of-the-art acrylic paint is a celebration of the *stuff* of art, central to the experience of artistic expression.

Properties of the New Paints and Central Issues in Color Field Painting

Furthermore, for Noland the physical properties of the new media were related to formal issues in abstract painting because the new paints provided material means to solve problems. According to him:

"color field curiously enough, or perhaps not, became a viable way of painting about exactly the time that acrylic paint -- the new plastic paint-- came into being. Oil paint would always leave a slick of oil, a puddle of oil, around the edge of the color, whereas acrylic paint stops at its own edge. . . .Color field painting came in at the same time as the invention of this new kind of paint. . . . One thing that people don't generally talk about is the fact that the experience of color is tactile. . . ."43

Even Noland's idea of the "tactility" of color had to do physical properties of his materials, with variations in consistency and texture of the paint. In his view color was not just about hue, saturation and tone, the three components in conventional color theory:

"You can only describe colors in tactile terms actually -- thinness, thickness which are visually touchable tactile factors -- transparency, opacity, matteness, dryness, sheens, those are all tactile terms."44

The new acrylic paints considerably expanded the range of possible effects related to Noland's ideas of tactility, notably by allowing admixture of many new inert

⁴². *op cit*, p. 9.

⁴³. This quote was transcribed directly from the video version of the filmed interview. Ken Noland in *Painters Painting: The New York Art Scene, 1940-70*, bw and colour, dir. and Prod. Emile de Antonio with Mary Lampson, Turin Film Corp., 116 minutes. A similar version appears in an edited transcript published in De Antonio, Emile and Mitch Tuchman. *Painters Painting*. New York: Abbeville Press. 1984 (based on interviews conducted in 1972), pp. 81-82.

⁴⁴. Noland and Cummings interview 1971, p. 43.

materials while retaining the intensity of the colour even when very dilute. Noland experimented with many different new materials to achieve variations in opacity, absorption and surface qualities.⁴⁵ (Although it is almost a travesty to reproduce this work in black and white, Figure 12 gives some impression of the varied tactile qualities Nolan thus achieved.) The new acrylic resin paints dried more quickly than oils and when used as stains on raw or lightly primed grounds were not conducive to reworking. This suited Noland's purposes in his studio practices, where he went through a stage of creating "one shot" paintings, (paintings which he purposely did not rework).⁴⁶

Other Factors in the Choice of Media: Novelty, Safety and Simplicity

Noland's early experimentation with media was not just about the aesthetics of the art object but about the process of painting. Furthermore, the urge to experiment was multidimensional, prompted by other concerns such as cost and simplicity:

"[The shift in my use in materials] started to take place in Washington. Already Morris had gotten hold of Magna plastic paint from Bocour because he was a friend of Bocour's. At that time Pollock was doing a lot of experimenting with materials. Part of it was out of necessity because artists couldn't afford to buy proper materials. It was just too damn expensive. That was the economic side of it. And I think it's probably also because there's another urge . . . in artists to want to use simple materials. This is an historical fact. Artists have always used very modest means of technology to produce art. . . Very simple means and very simple materials. . . The best artists always just use fairly simple stuff and use them well."⁴⁷

Here Noland raises a point which is easy to forget when reading lengthy descriptions of what could be done with synthetic media. The new media were in some respects much simpler to use than traditional oils (or tempera or casein) because they could support a

⁴⁵. "For example, some pigments were mixed with varnish or gel or pearlescent powder so that the bands would lie opaquely on the surface, and others, usually those in the large center area, were mixed with detergent, making them more transparent and letting color stain through the canvas. Noland calls this kind of differentiation the "tactility" of color". Moffett, 1977, p. 73

⁴⁶. Interview with Kenneth Noland by Avis Berman, July 1, 1987. AAA. transcript, p. 24.

⁴⁷. Noland and Cummings interview, 1971, p. 23.

wider range of grounds and application techniques. Noland also mentioned other appeals of synthetic materials. Novelty was in vogue and experimenting with materials was one route taken in artistic investigations. Another hope was that new media might offer some relief from the health hazards of traditional artists' colours. He commented that

"there were other things going on and other experimenting going on with materials. Pollock was using enamel. There was some other painter -- I can't think of his name -- who got lead poisoning and had started to make up a kind of plastic paint that we heard about. I've experimented some with it using dry pigments and making my own color. So the need for a new kind of material was always there."⁴⁸

Noland stopped using Magna in part because he found the fumes from the acrylic resin and the turpentine insupportable.⁴⁹ He became increasingly worried about the possible health hazards of using these products after the death of Louis.⁵⁰ Noland apparently used Magna extensively until about his *Chevron* series of 1963 and then only sporadically thereafter.

Noland's Contacts with Paintmakers

Like Morris Louis, Noland's first extensive use of synthetic paints in his work was with Bocour's acrylic resin paint Magna. He also made his own pigmented painting mixtures with materials purchased from a Washington art supply store and used some

⁴⁸. Noland and Cummings interview, 1971, p. 24. Noland may be referring here to Alfred Duca who developed a formula for polyvinyl acetate which was deemed safe enough for use by school children. It was called by the generic name "Polymer Tempera" and he released to public domain in about 1945. See Woody 1965, p. 109.

⁴⁹. Other factors in his decision to abandon Magna had to do with a change his methods of working and a belief that the quality of the paints had declined, particularly noticeable in diluted washes when coarsely ground pigments that would float to the surface before the paint could dry. Noland 1994.

⁵⁰. Louis died of lung cancer. Although he was a heavy smoker, informants expressed suspicions about the possible carcinogenic effects of the acrylic resin used in Magna, particularly if ingested unintentionally. His exact working methods are not known and some conservators have speculated that he may have warmed the thinned paint mixture to achieve more rapid absorption which could have generated noxious fumes as well. Noland commented that he himself stopped using Magna because of the fumes and his suspicions that using the paint may have hastened his friend Louis' death. Telephone interview with Kenneth Noland by Jan Marontate, January 3, 1994.

housepaint.⁵¹ With Louis, Noland began to place custom orders of thin acrylic paints with Bocour and Golden after the company adopted a thicker standard formula around 1960. He used to visit the shop and recalled talking a great deal with Golden about paint, discussing "what it was we liked and how it was we wanted it".⁵² Subsequently Noland tried many brands of acrylics but remained in contact with the paintmakers who solicited his opinions about paints they were developing.⁵³ He continues to be in contact with Golden Artists Colors and, along with Larry Poons and Jules Olitski, sometimes agrees to try out experimental products like thick gels and metallic colours developed by the paintmakers.

David Smith's Inspiration and Experimentation with Materials

Noland attributed his enthusiasm about technical experimentation in part to contacts with other artists interested in innovative use of materials, notably sculptor David Smith (1906-1965). Smith, who had worked as a skilled labourer, had insisted on the use of industrial materials in his artmaking as a matter of vocational aptitude and as "part of a search for vital new expressive forms".⁵⁴ With Englishman Tony Caro's work, Smith's work was seen by critics and historians as a parallel in the field of

⁵¹ In about 1955 he recalls using a glue which was made with a polyvinyl acetate. Moffett confounds this with the medium for Bocour Artist Colors acrylic emulsion paints Aqua-Tec and claims incorrectly: "This was the beginning of the use of water-soluble acrylic paint. Three or four years later, it could be bought commercially from Bocour." Moffett 1977, p. 101. Henry Levison of Permanent Pigments beginning to distribute the water-borne acrylic Liquitex by this time. Both Liquitex and Aqua-Tec were based on a Rohm and Haas acrylic polymer emulsion (AC-33) in the beginning.

⁵² He was still receiving samples for comments from Golden at the time of the interview. Noland and Marontate interview, 1994.

⁵³ In the 1960s he specifically recalled using the following brands of acrylic emulsion paints: Aqua-tec, Liquitex (which he felt dried chalkier) and Shiva (which had a brilliance he mistrusted). Noland and Marontate interview 1994.

⁵⁴ Smith had been employed on the assembly line of an automotive plant as a riveter and welder before he became an artist. Although his working-class origins were stressed in analysis of his technique, Smith's innovative work with techniques also had connections to European-based high culture circles. Smith credited his artistic liberation in part to the influence of Julio González (1876-1942), a Spanish sculptor who was a close collaborator of Pablo Picasso in the last two decades of his life and is considered a pioneer of twentieth-century sculpture in metal.

sculpture to Noland and Louis' post-painterly abstraction. Smith had connected his use of metal and industrial techniques to a break with art history and an affirmation of the qualities of his times:

"The metal itself possesses little art history. What associations it possesses are those of this century: power, structure, movement, progress, suspension, destruction, brutality."⁵⁵

Smith also had very practical, workmanlike habits towards his studio practices. Noland said Smith had profoundly affected his way of making art:

"When I first met David, I didn't know how to set myself up so that I *could* work. In those days, you'd buy a paintbox and an easel, take a couple of canvases, work on them and then put the paints away and fold up the easel. that was the basic way of trying to be a painter while you did other things, like having jobs to support yourself. David advised 'Buy materials when you can and in quantity. Don't just get one stretcher or one tube of paint.'"⁵⁶

According to Noland, Smith inspired him to try modern materials, equip his studio with lots of materials and to work every day keeping regular hours like a tradesman.

Technical Skills as an Affirmation of Working Class Affiliations and Artists as an Elite

Noland also cited the importance of his family background for the development of his interest in materials and techniques:

"When I grew up in the '20s and '30s . . . one of my grandfathers was a blacksmith. During that time all of the craftsmen -- the plumbers, electricians, carpenters, the workers -- considered themselves artists. They really did and they were considered artists because they were very adept at doing things. People used to have to do a lot with their hands and they had to have knowledge of the craft that they were doing. So wherever you looked around, you could see people that were proud in terms of their mechanical skills. It was wonderful to see that."⁵⁷

The critical and financial success of Noland and other artists associated with the new abstraction made them an artistic elite in the powerful circles of the international art market. Noland denied his art stemmed from elitism. He expressed annoyance that his

⁵⁵. "David Smith Dies; Metal Sculptor," *New York Times*, Tuesday, May 25, 1965. n.p. clipping from Bocour Papers, courtesy Mrs. Ruth Bocour.

⁵⁶. Noland in Wilken 1990, p. 9.

⁵⁷. Noland and Berman interview 1987, p. 8.

success associated him with a powerful elite in upper class society or in political circles: "there was some art criticism about myself, in which I was accused of being an elitist. Leo Steinberg said that I was making art that appealed to the industrial-military [complex].⁵⁸ Now, I minded that, you know, being called an elitist. It was not just myself. It was also Clem Greenberg and our general group of artists: Tony [Caro] and Jules [Olitski] and Morris Louis and so forth. And that our art really appealed to this kind of upper-class taste."⁵⁹

Like Smith and reminiscent of Siqueiros, Noland saw his interest in trying new materials partly as an affirmation of his commitment to skilled manual labour although he did

admit that artists were in some respects an elite within the working class:

"Then I had to figure out that if artists are elitist, they're not elitists in the sense of privileged people or upper-class people. Since artists are mechanics too -- we work with our hands, we make things -- if we're elitists, we're elitists of the working class, not elitists of the upper class. Our aspiration is not that. Therefore artists are involved in the nature of creativity, the nature of skills and the processes of the making of things, the revelations or making things, actually executing things. Artists are not people that come by this as intellectuals, necessarily, or upper class people, but as workers."⁶⁰

Concluding Remarks about Noland's View on Materials

Noland places materials at the center of the artistic experience of creation, emphasizing the centrality of the process of manipulating tools and materials in the practice of painting. The recognition of this centrality of materials and their manipulation in artistic practice was, according to him, essential for the emergence of autonomous abstraction in the generation of action painters to precede him. This recognition allowed what Noland calls the *stuff* of painting (the manipulation of the materials, tools working with relations between them) to become the subject of painting, making it a truly abstract enterprise. Contacts with other artists opened him up to

⁵⁸. Note there appears to be a transcription error here since this reads "context" rather than "complex" in the transcript.

⁵⁹. Noland and Berman interview, 1987, pp. 8-9

⁶⁰. Noland and Berman interview, 1987, pp. 8-9

experimentation with new media. The characteristics of synthetic media, in particular acrylic paints, provided new sources of stimulation in the process of artistic discovery essential for the early development of colour field painting. The "materiality" of abstract painting had social and political implications as well for him. According to Noland the artist's actual manipulation of tools and materials is an essential part of artmaking. This physical aspect of the artist's work identifies artists with the working class and differentiates them from oppressors, regardless of the reception of the art they create by dominant forces in society.

Jules Olitski :Capturing Vision in Paint

Associated with post-painterly abstraction along with Louis and Noland, Jules Olitski (b. 1922) came to the attention of critic Clement Greenberg after his first solo show in the U.S. was held in 1958 and thereafter became a prominent figure in American painting.

Olitski had immigrated to the U.S. as a very young child with his widowed mother and grandmother who lived with him during his early years.⁶¹ He studied art in New York City and, like Noland, used the G.I. Bill to take classes in Paris with the sculptor Ossip Zadkine. In France in 1949-1951 he began to concentrate on painting and met some artists, notably Michel Tapié, who showed him what he later described as "all-over impasto" paintings by Jean Dubuffet. There too he began painting blindfolded to break free of habits. Returning to the U.S. he studied art education at university and began teaching at Long Island University (1956-1963).

⁶¹. His birth name was Demikovsky. His father was executed by the Soviet government in 1921, a few months before Olitski's birth. His mother and grandmother emigrated to the U.S. in 1923 and his mother married Hyman Olitsky in 1926. The catalogue for his first one-man show in the United States in 1958 spelled his last name with an "i" and Olitski adopted this spelling because he liked it. Woron, Elinor L. and Kenworth Moffett, "Chronology", in Moffett, Kenworth. *Jules Olitski*. New York: Abrams, 1981, pp. 202-213.

Olitski and Noland taught together at Bennington College in Vermont in the mid-1960s along with other artists interested in what critics at the time were calling "advanced" art. (In 1967 Olitski began to paint full time, taking a studio in New York where he kept a studio for decades. At the time of the interview he had two principal studios in the North Eastern U.S. and one in Florida.)

Olitski and Noland were close colleagues for a time and soon became well-known in both the U.S. and in English-speaking Canada due to their involvement with a summer art school in Saskatchewan, the Emma Lake workshop, and to subsequent shows in Toronto.⁶² In 1963, Greenberg organized an exhibition of the work of Olitski, Noland and Louis. Greenberg presented the paintings in the show as challenging, "difficult" works and counselled visitors to evaluate them as "vehicles and expressions of feeling", not as images to be read.⁶³ Two years later, aspiring art historian Michael Fried took up the theme again calling Noland and Olitski "painters of feeling" and, with Frank Stella, designated them a "critic's choice" of young painters.⁶⁴ Olitski himself also often referred to feelings and emotions in discussing his experience of painting and of the visions which he tries to capture in paint.

Artistic Vision and Choice of Materials

According to Olitski, describing how he paints in terms of tools and materials

⁶². Olitski conducted the workshop in 1964. The Emma Lake Workshop, organized by the Art Department of the University of Saskatchewan, Regina invited many American avant-garde artists and critics over the years, among them: Lawrence Alloway, Clement Greenberg, Kenneth Noland, Barnett Newman, Frank Stella and Donald Judd. The David Mirvish Gallery in Toronto showed many of the Emma Lake artists.

⁶³. The exhibition was called *Three New American Painters: Louis, Noland, Olitski*. It was held at the Norman Mackenzie Art Gallery in Regina Saskatchewan in January-February 1963. His introductory essay appeared in the exhibition catalogue and in *Canadian Art*, May-June 1963 and is reproduced in his collected works. O'Brian 1993 IV, pp. 149-153.

⁶⁴. Fried, Michael. *Three American Painters. Kenneth Noland, Jules Olitski. Frank Stella*. Boston: Fogg Art Museum and Garland Publishing, 1965. The exhibition was also held at the Pasadena Art Museum that year.

gives a distorted view of the experience of painting because it "leaves out the passion involved".⁶⁵ For him making art is "always exciting" but the choice of materials is purely instrumental, almost a matter of common sense. The kind of paint, the use of rollers, brushes, sprayguns, thin paint or thick paint "are not for their own sake, but simply to get the look you want".⁶⁶ He insisted that

"My feelings about materials . . . are simply that the materials are to suit the vision. . . you find the materials . . . which are just common sense almost. There's no mystery in it. . . I don't have any. . . kind of mystical or historical academic kind of attitudes or ideological attitudes to materials. It's what will suit my needs, my vision. . . I use different things at different times."⁶⁷

In the early and mid-1950s, Olitski made most of his own painting materials, first out of financial necessity then because he wanted special effects.⁶⁸ By then he was combining dry pigment, spackle and a synthetic medium to create sculptural abstractions which were likened to European *art informel*.⁶⁹ He continued to experiment with unusual materials seeking a different involvement with the surface of the canvas by using dyes in the early 1960s, but had technical problems fixing the dyes.⁷⁰

Although he himself was once considered radical for his use of unconventional materials, Olitski expressed wariness at using unusual materials just because they were different:

"What I mind very much and I think it's bad for art is the idea that you will be original by finding out way-outish kind of materials. And that doesn't guarantee anything. It just guarantees a kind of. . . self-indulgence. But it doesn't guarantee quality. . . Materials for the sake of materials. . . doesn't make for anything in terms of quality. It just makes for some kind of pretense that's

⁶⁵ Interview with Jules Olitski by Jan Marontate, September 22, 1994.

⁶⁶ Olitski in De Antonio and Tuchman 1984, p. 147.

⁶⁷ Olitski and Marontate interview 1994.

⁶⁸ He had earlier used artists' handbooks on techniques and materials by Max Doerner and Ralph Mayer. He claimed the chapters in Doerner's book on Old Master's techniques were very important to him. Olitski and Marontate 1994.

⁶⁹ He did not recall whether he obtained the medium from Du Pont or Rohm and Haas. He recalled it was a polymer, perhaps Rhoplex. — Olitski and Marontate interview, 1994.

⁷⁰ Only a few of these paintings still exist. He did use some proprietary colours during this period.

shocking. But I don't care what you use as long as you make good art."⁷¹

During the mid-1960s when he began to use acrylic paint, Olitski created optical fields of atmospheric colour by combining staining techniques with spraying. He recalled the conditions for beginning this way of painting:

"I'd had this kind of a vision. We'd been over at Ken's studio. I'd taken my students over there . . . He lived a few miles away from the college. . . and Tony Caro came along too. The students were sitting around in Ken's studio and being very silent. I had thought they'd just be bubbling with questions to ask Ken . . . but they sat sort of mute . . . so the three of us were talking together and Tony said something about what he would like for his sculpture and he referred to kind of a dense materiality. . . And I said well what I would like for my painting. . . was that if I could have just a spray of colour that would remained suspended and not lose its shape. And everyone laughed and I did too. But then that evening as I was falling asleep I thought "well maybe it was funny but it was more than that". And I could see a painting made with a spray gun. And I got a professional spray gun and I did my first painting on a large canvas."⁷²

In about 1964 he began using turpentine compatible acrylic resin artists' colors (Magna) for large spray paintings but switched to water-borne acrylics because he found the fumes insufferable:

"But the Magna paint, the spraying of the paint and the thinning of it with turpentine was ghastly. I almost died from the fumes and I remember rushing out of the studio in the middle of the night. . . to get some air in my lungs and not faint."⁷³

Most of his subsequent painting has been done in water-borne acrylics using various gels and mediums which add texture and body. However, he has tended to add new methods without abandoning earlier ones.

Olitski's art is so difficult to describe in words and almost impossible to reproduce because of its heavy reliance on subtle variations in colour and texture. Critics and curators often allude to his working technique when discussing his painting, in part simply to try to evoke the look of the work. For example, curator Terry Fenton

⁷¹ Olitski and Marontate interview 1994.

⁷² Olitski and Marontate interview 1994. A very similar account appears in the transcript of a filmed interview: De Antonio and Tuchman 1984, pp. 80-81

⁷³ Olitski and Marontate interview 1994.

distinguished three principle phases in the chronology of Olitski's painting technique in a twenty-year period, each characterized by a different method of paint application: stain painting (1960-64), spray painting (1965-71) and what he terms "material painting" (1972-79) which refers to works done with very thick paint, often applied using trowels and scraping tools.⁷⁴ (No reproductions of his work have been included here because his early works in acrylic are impossible to see in black and white reproductions.)

Although Olitski denies the importance of the choice of materials for the ultimate effect of the work, he pointed out that the process of painting itself and observing the way the materials behave engenders new ideas and new artistic visions.

For example:

"I used paint rollers when I was trying to get one colour . . . to just [give] the naked illustration of what happened . . . to get one colour flowing into another. . . And sometimes with rollers the paint gets a little thick in places and that struck my eye. . . so my painting became thicker then. . . One thing leads to another but it's essentially that the horse comes before the cart. You get the materials that will suit your vision. First comes the vision then comes the materials. . ."75

In his discussions of choice of art materials, his emphasis is always on the effectiveness of the resulting art and the suitability of the materials for conveying artistic visions.

Olitski on the Insignificance of Theories for Artistic Practice

Olitski was adamant about the insignificance of theory for his artistic practice.

In his words:

"For an artist, at least speaking for myself, the theory always came after the act. And it always came doing certain things in painting. And afterwards I wouldn't know why I had done it. So I would make up a theory which I believed. . . The insecurity of an artist is answered by his theories . . ."76

⁷⁴. Even into the 1990s Olitski's painting continued to explore very thick impasto effects using special gels and interference colours produced by Golden Artists Colors. For a summary of the chronology of Olitski's technique see Fenton, Terry. *Jules Olitski and the Tradition of Oil Painting*. Edmonton, Alberta: Edmonton Art Gallery, 1979, especially pp.15-18.

⁷⁵. Olitski and Marontate interview 1994.

⁷⁶. Olitski and Marontate interview 1994.

He went on to give an example of a theory about his way of painting which he developed *ex post facto*:

"when the paintings I was doing had no drawing in them except on the edge I came up with a theory that I think was brilliant. Which was . . . that the edge, the very edge of the canvas was a line and drawing is lines so drawing belongs along on the edge, right? So I mean that this is nonsense. It's just polemics of a sort. That's as much theory as I get into. I just try to get something that I'm envisioning, frequently as I'm falling asleep, that excites me. And so I go and paint out of curiosity or restlessness to see what will happen when I do this. Will it look as I see this radiant wonderful thing? . . . Frequently I go and do it and it doesn't do that, but something else happens and I pursue that. So I'm not much for theory."⁷⁷

Indeed he expressed almost an aversion to talking about his painting in terms of theory:

"I don't get at all involved in any kind of theories. I find them rather repelling."⁷⁸

Furthermore Olitski expressed a lack of interest in theoretical issues raised by critics and academics, in particular in formalist discourse about his work:

"I've never cared one way or the other about flatness, picture plane or any of these things that [the academics] get going about and talking about."⁷⁹

However, he was very close to Clement Greenberg, claiming that although Greenberg was considered "the apostle of flatness" the critic had "great eye for art" which transcended the narrow strictures of formalist theory.⁸⁰ Olitski developed a wide range of other contacts interested in the arts during his New York days, among them painters Len Bocour and Sam Golden.

Relations with Paintmakers Bocour and Golden

Olitski was a client of painters Bocour and Golden. He recalled that his relations with the painters began in the 1950s because they:

"would give me paint in exchange for paintings which was very, very generous because at the time . . . no one would have dreamed especially that I would have

⁷⁷ Olitski and Marontate interview 1994.

⁷⁸ Olitski and Marontate interview 1994.

⁷⁹ Olitski and Marontate interview 1994.

⁸⁰ Greenberg continued to visit Olitski's studio regularly until shortly before his death.

a future as an artist. I was very happy to give the paintings and get paint in return."⁸¹

Olitski soon became friends with Len Bocour. They socialized together and Bocour attended the openings of Olitski's shows and corresponded with him about his work. Olitski knew Golden too, and often gave him opinions about the new products that the paintmakers were developing. Later Sam and Mark Golden were able to finance their new paintmaking company partially with the sale of some of the paintings traded for paints. Olitski became an important early customer for Sam and Mark Golden in their company.

Concluding Remarks on Olitski's View on Materials

Olitski's testimony puts feelings of passion and excitement at the core of his experience of painting. In his accounts, materials and artmaking tools are simply a means to an end, although artistic visions and ideas about new images occur while working with materials. Above all, Olitski stresses the importance of his own feelings about his work and his belief that only he determines the direction of his art, not theories or materials. His commitment to setting his own course is related to fundamental views on the nature and meaning of life. His frustration at discussing painting techniques and materials appears to grow out of deep convictions which might be almost considered transcendental were he not so modest in his statement of his goals. Olitski summarized his views on painting by placing his decision to paint in the context of a personal event in his youth:

"I decided to be a painter when my grandmother died. There was something about that that made a number of things clear to me. You know, I was kid . . . and I had loved her very much. . . And I got nonetheless a sense of an absolutely wasted, thrown-away life, like a dead cat on a garbage heap. And it made me get a very clear look at all the people around me, you know, family, their friends. The one thing that got through to me was the notion of, if there's anything that you want to do that's meaningful, and in my case it was painting, . . . if there's one

⁸¹. Olitski and Marontate interview, 1994.

thing that you want to do, do it, do it, do it."⁸²

Larry Poons: You Can't Think a Great Painting

.. Larry Poons (1937-) is another artist associated with color field painting, but the optical qualities of his work, in particular the strange hallucinatory after-images he achieved were also linked to Op Art in the 1960s.⁸³ Younger than Olitski and Noland, his first ambition was to become a composer. He studied music in New England and with minimalist composer John Cage at the New School for Social Research. He attended art classes at the Boston Museum School for about six months after which he set up a studio in New York City. His discourse about the place of materials in his painting refers to his interests in other art forms and a preoccupation with the field of painting.

Materials as Intrinsic to Art

Poons insisted on placing the discussion of painting media in the broader context of his ideas about the nature of painting and the visual arts in general. Interestingly, in his discussion of the purview of painting he referred to St. Thomas Aquinas, the medieval Aristotelian scholar who had emphasized that each discipline has its own subject. Poons took pains to explain what painting "is about" stating:

"Painting in itself is . . . not metaphysical. . . When you become a scholar. . . what you are doing is you are talking about what you can only talk about because if you don't do it there is no possible way to even begin to experience the experience. It comes out of language. . . Painting exists on a visual level first. First and last it's visual."⁸⁴

Furthermore he contended that "the art I'm talking about doesn't exist other than in the materials", though he acknowledged that not everyone would agree that art necessarily had a material presence:

⁸². Olitski in a 1972 interview quoted in De Antonio and Tuchman 1984, p. 154.

⁸³. He was born in Japan but moved to the New York City area as an infant.

⁸⁴. Interview with Larry Poons by Jan Marontate, February 10, 1994. Tape 2.

"This is all about materials. This relates very much to the misinterpretations of what materials are in art. What place do they have in art? It's quite elementary that without materials there is no art, because art is made out of materials. . . conceptualists won't like it but conceptualists, whether they like it or not have already defined what they are doing. It's conceptual. It's not art. It's not art in the sense that art is material things. . . "85

Art Materials and the Unexpected "That's What's Called Working"

Like Olitski and Noland, Poons downplayed the importance of theory and stressed the empirical dimensions of the practice of painting. According to Poons because materials behave in unanticipated ways, artists use them to generate new ideas.

He explained the process of painting as follows:

"The reason for doing it is to see what is going to happen. I mean it's not that simple. It's not that clear-cut. . . You always kind of feel what you want but the materials will always kind of -- not get in the way--but suggest things that you didn't even think of, didn't expect."86

The unexpected, unpremeditated aspect of the experience of painting is fundamental to artmaking in Poons' view:

"I think that's the more important thing-- [materials suggest] what you didn't expect. What you do expect, when it happens, that's nice too. But [if what you expect always happened] then that would mean that we could *think* great paintings. . .

Great paintings are *painted*. That's why they're paintings. . . . If they're not painted then they're something else. They could still be great but they're not paintings. They might be sculptures. They might be theater. They might be movies. . . "87

Yet unexpected effects are not always serendipitous and Poons talked about going back to things he did not like and trying them over. According to him:

"that's what's called working. If you liked it you wouldn't have any work to do. . . . If you liked it your work would be finished. . . "88

Indeed, for him, one of the reasons for trying new materials is to find new stimuli for

85. Poons and Marontate interview, February 10, 1994, Tape 2.

86. Interview with Larry Poons by Jan Marontate, February 1, 1994, Tape 1.

87. Poons and Marontate interview, February 1, 1994, Tape 1.

88. Poons and Marontate interview, February 10, 1994, Tape 2.

generating new directions in his art:

"Materials give you something that you don't expect. . . . After a while it becomes too expected for you to react to. A new material that you don't know what to expect is what propels you to do something-- which is in essence what working is . . . an introduction of [a new] material is simply a means to see . . . something that you didn't expect because you haven't worked with it yet. . . This is the role of materials. . . ."89

The Choice of Materials and the Quality of Art

Anti-formalist criticism in the past questioned Poons' discussion of his way of working and the physical characteristics of the works, criticizing him for putting too much emphasis on facture in his discussion of his work, but Poons has insisted for years that "the means should never be confused with the end."⁹⁰ For him, ultimately the quality of the artwork is all that matters. Asked what the criteria for quality he uses, he replied : "good art is convincing. . . . Bad art needs a lot of explanations to make it seem convincing."⁹¹ He explained that, for example, quality in painting could be recognized immediately by people with suitable aesthetic sensibilities.

Although Poons sees materials as intrinsic to painting by definition, he emphatically repeated the belief in the importance of the quality of the art produced, not what media were used to create it:

"What's important is "Is it any good?" . . . not that it's acrylic . . . That isn't good or bad. Not whether it's charcoal or whatever the cave painters painted with. It doesn't matter. . . ."92

He claimed that the choice of materials are important for the artist but has little effect on the reception of the work of art, at least as far as his aesthetic experience of art is concerned:

⁸⁹. Poons and Marontate interview, February 10, 1994, Tape 2

⁹⁰. Zinsser, John. "Larry Poons. An Interview" reprinted from *Journal of Contemporary Art* Fall/Winter 1989, vol. 22, pp. 28-38 in *Larry Poons. Paintings 1963-1990*. New York: Salander'O'Reilly Galleries, pp. 20-24, esp. p. 23.

⁹¹. Poons and Marontate interview, February 10, 1994, Tape 2.

⁹². Poons and Marontate interview, February 10, 1994, Tape 2

"I think that whether it's material a or material b or material c. -- that's like saying the piece of music is being written in this key and not that key, or the instrumentation is different for this piece than that piece. . . . I have to hear the piece. I cannot care for or not care for the piece depending on your instrumentation. The instrumentation is not what's going to decide my like or dislike or enthusiasm or reaction to the piece. I am not going to react differently because I know it's painted this way or it's painted that way or it's painted with this or it's painted with that. That is not what's important."⁹³

According to Poons the artist focuses on the visual and tactile properties of the materials when deciding which ones to use:

"the artist choses to use this thing because it's rough. Or to use this thing because it's bright, or to use this thing because it's dull. Or to use this thing because it's dark or because it's flat or because it's round.

I'm the one --or you're the one if you're the one if you are making the piece-- that [choice of materials] is meaningful to. To somebody looking at the piece, if they had to ask what it's made of before they know what to think of it they should be doing something else but looking at paintings. Because paintings are not for them. Just like me looking at a stamp collection. Stamp collections are not for me. I do not see what many people see in stamps."⁹⁴

In his view the talent of the artist to find a way to make materials into art is the necessary catalyst in the process of artistic creation. There are no pre-established limits or ready-made choices which will guarantee success. In his words:

"If we all knew the material that would allow us to be great artists then we'd all use that material. And we'd all be great artists, right? And we'd all make great art. It's never just material. . . it depends on the person. . . How many times has somebody picked up the same thing and done nothing with it? . . . You don't know until it's done. Until it happens. It isn't the materials that makes Pollock any good. It isn't the materials that make Miró good. Is it?"⁹⁵

On the Popularity of Water-borne Acrylics during the 1960s and Relations with Paintmakers

Like Olitski, Noland, Frankenthaler, and Stella, Poons was working with staining and very thin applications of colour during the late 1950s and early 1960s. Around 1960 Poons had begun to use a spray-on fabric dye he found in a hardware

⁹³. Poons and Marontate interview, February 10, 1994, Tape 2

⁹⁴. Poons and Marontate interview, February 10, 1994, Tape 2.

⁹⁵. Poons and Marontate interview, February 10, 1994, Tape 2.

store to attain an even stain on raw canvas.⁹⁶ He found the fumes unpleasant, the packaging cumbersome and one of his neighbours, Canadian-born painter Agnes Martin, suggested water-borne acrylic paints could be used to give the same effect (see Figure 13). He has used water-borne acrylics ever since. Over the next few years Poons also began using other products made by paintmakers for use with synthetic paints like the water tension breaker marketed by Bocour Artist Colors to enhance the flow and gels. He also has continued to use materials not intended for artists' use in his work.⁹⁷

Poons maintained that the widespread use of acrylics in the 1960s had a great deal to do with practical concerns, in particular the fact that the water-borne acrylics were safer and more pleasant to use because many artists were using very dilute mixtures in painting at that time:

'The whole thing with the acrylic paint and . . . [the reason] not use oil paints to do the same things [is that with oils] the trouble is you'd have to use tanker truckloads full of solvents. Everyone would have blown themselves up a long time ago if you painted with oil paints and thinned them down the way we were able to thin down the acrylics and paint very watery with them. . . . I mean the studio would be a foot deep. Not in water the way it sometimes used to get. It would be a foot deep in like bad stuff, which you'd be breathing and smoking and you know everybody would have been blowing themselves up or not painting the way they were painting, i.e. you know like very thinned down stuff.'⁹⁸

Although he began to make custom orders of paints (notably special colours and heavy gels) later, Poons did not have paintmakers do much custom work for him in the 1960s because

"I never had anything I wanted them to make. I was perfectly happy just to use the paint the way it came. . . . What could they do that you can't do in the studio really. That's pretty much the way I feel about it."⁹⁹

⁹⁶ Called Fabspray, it intended for household use on items like upholstered furniture.

⁹⁷ For example, he learned from artist Helen Frankenthaler that a common dishwashing detergent would attain the same effect as Bocour's water tension breaker at a lower cost and uses that instead when he wants a thin even acrylic stain. The detergent was marketed under the brand name 'Joy'.

⁹⁸ Poons and Marontate interview, February 1, 1994, Tape 1.

⁹⁹ Poons and Marontate interview, February 1, 1994, Tape 1.

Nor did he become involved in making his own paints, intimating that this type of activity is outside of what he believes to be the work of the artist: "I know people who have and it becomes another life".¹⁰⁰

Concluding Remarks about Poons on Materials

Poons emphasized the physical, material nature of painting and the elementary importance of materials for the practice of painting because 'art is made out of materials'. Unexpected results which come from working with materials provide inspiration and new directions. New media, like acrylics, may be adopted from their particular visual or tactile properties, or because they are safer and more pleasant to use.

He maintains that:

"real artists don't respect their materials... Manufacturers do [because] that's their bread and butter. They're just doing commerce."¹⁰¹

Thus, for Poons materials are naturally part of artmaking but artmaking transcends the simple definitions of its materials to become something else -- art.

Roy Lichtenstein Romantic Gesture Takes a Comic Turn (or Flatness Made Funny)

American painter and sculptor Roy Lichtenstein (b.1923) gained notoriety in the early 1960s for his novel depiction of images from popular culture, many of which were derived from comic strips and advertisements for consumer products.¹⁰² Pop art, as the art of Lichtenstein and contemporaries working in a similar vein came to be known, developed in the wake of abstract expressionism at about the same time as Color Field painting although its rise to prominence in high culture circles and its consecration by

¹⁰⁰. Poons and Marontate interview, February 1, 1994, Tape 1.

¹⁰¹. Poons and Marontate interview, February 10, 1994, Tape 2.

¹⁰². An extensive bibliography appears in the exhibition catalogue for a large retrospective shown at the Solomon R. Guggenheim Museum in New York, the Museum of Contemporary Art in Los Angeles and the Montreal Museum of Fine Arts in 1993-1993. Waldeman, Diane, *Roy Lichtenstein*. New York: Guggenheim, 1993.

the international art market came slightly later.¹⁰³ These artists presented images of artifacts from everyday mass culture sources (or sometimes even the artifacts themselves) in a high culture setting. Often they exalted *kitsch*, cultural objects considered to be in poor taste by dominant aesthetic systems. By the early 1960s, the word *kitsch* had become a commonly used antithesis to high cultural art forms particularly after republication of Clement Greenberg's explanation of the term in a call to arms against the mechanically-produced "debased and academicized simulacra of genuine culture" which used mechanical formulas to elicit "vicarious experience and faked sensations".¹⁰⁴ According to Greenberg's statement which had been first published in 1939:

"Kitsch is the epitome of all that is spurious in the life of our times. Kitsch pretends to demand nothing of its customers except their money -- not even their time.

The pre-condition for kitsch, a condition without which kitsch would be impossible, is the availability close at hand of a fully matured cultural tradition, whose discoveries, acquisitions, and perfected self-consciousness kitsch can take advantage of for its own ends. It borrows from it devices, tricks, stratagems, rules of thumb, themes, converts them into a system and discards the rest. It draws its life blood, so to speak from this reservoir of accumulated experience."¹⁰⁵

Lichtenstein and other pop artists deliberately drew on the techniques and iconography associated with *kitsch* to produce art and aesthetic events which stood in outrageous opposition to the 20 year-old dictum of Greenberg.

Yet, pop art was not without references to art history or theories of art, which the renegade artists often mocked openly. Lichtenstein mentioned cubism as an

¹⁰³. During the 1950s many of Lichtenstein's contemporaries were also working with images from mass media and popular culture, among them Jim Dine, Jasper Johns, Claes Oldenburg, Robert Rauschenberg, James Rosenquist, George Segal and Andy Warhol. Pop art was not exclusively American. In England Eduardo Paolozzi and Richard Hamilton had been using images from American advertising in collages beginning in the late 1940s.

¹⁰⁴. Greenberg's paper, first published in 1939 was reprinted in a collection of papers which appeared in 1961 entitled *Art and Culture*. Greenberg, Clement. "Avant-Garde and Kitsch," *Partisan Review*, Vol. 6, Number 5, 1939, pp. 34-49.

¹⁰⁵. Greenberg 1939, p. 40.

influence on his notions of composition.¹⁰⁶ The connection of Pop art with surrealism and dada was obvious as well. In the 1950s and early 1960s the playfulness of Pop artists stood in harsh counterpoint to the extreme seriousness of metaphysical interpretations of the epistemological dimensions of randomness which had become part of the surrealist legacy in the hands of abstract expressionists. By contrast pop artists did manifestly silly things and managed to make them commercially successful thereby challenging received notions: for example Rauschenberg erased a drawing by Willem De Kooning and sold it as a work of art. He also cast two aluminum beer cans in bronze in what might be seen as a parody of Marcel Duchamp's *ready-mades*, works of art made using mass-produced objects.¹⁰⁷ Pop artists used both traditional and unusual materials and techniques to create art which was often seen as disturbingly iconoclastic, breaking with conventions in subject-matter, technique and even division between art forms.¹⁰⁸ Sometimes comic, often acerbic, these various artists developed quite different ways of working with popular images which nonetheless later came to be seen as connected, through attitude as much as subject matter. Lichtenstein, like many other Pop artists, developed his own distinctive approach initially in relative isolation, although he had some important contacts with members of avant-garde groups beginning in the late 1950s.

Roy Lichtenstein was born in New York City. In his youth he took classes at Parsons School of Design and the Art Student's League (with Reginald Marsh). He began university studies in fine arts at Ohio State in 1940. In 1943 he was drafted.

¹⁰⁶. Waldeman 1993, pp.3-16.

¹⁰⁷. One of the most famous examples of this was a 1917 work by Marcel Duchamps entitled *Fountain*, which was a ready-made porcelain urinal signed with the pseudonym "R. Mutt" and dated and exhibited in New York as a work of art.

¹⁰⁸. Sometimes critics simply found the inclusion of Americana and mass media images simply annoying when presented as high culture art. See for example: R[obert] R[osenblum]. "Roy F. Lichtenstein", *Art Digest* 29, number 10, February 15, 1954, p. 22. [Author's full name from Waldeman 1993, p. 16.]

During his army service Lichtenstein took classes in mathematics and science as part of a pre-engineering program, then was put into pilot training prior to being sent overseas to do combat duty. His duties in the U.S. included making large copies of cartoons for his commanding officer.¹⁰⁹ In Paris in the fall of 1945 he enrolled in history and language classes but returned home on furlough to visit his dying father in the U.S.. After the war he completed a Bachelor's and Master's degree in Fine Arts at Ohio State, and taught art there until 1951 when he was denied tenure.¹¹⁰ During the next six years, he continued to paint and worked at various odd jobs (such as making project models for an architecture firm). In 1957 Lichtenstein again found full-time employment as a university art professor and taught for a few years in New York State and at Rutgers University in New Jersey.¹¹¹

Lichtenstein recalled that contacts at Rutgers were important for encouraging him to pursue his interests in popular imagery.¹¹² While teaching there he met Allan Kaprow who introduced him to artists working in the Pop vein (notably three-dimensional artists Oldenburg, Dine and Segal). At this time another colleague, Robert Watts also introduced him to members of the growing Fluxus movement: George Maciunas, Dick Higgins and Alison Knowles. Fluxus was an international group of artists who opposed artistic tradition and the "arts establishment", organizing artmaking activities and events like *happenings* (a term coined by Alan Kaprow in 1959). Kaprow's *Happenings* built on the ideas of composer John Cage about the place of chance in artistic creation, setting up situations which incited "audience" participation. In practice and in theory this sort of "performance art" was linked to a wide range of

¹⁰⁹ Waldeman 1993, p. 7.

¹¹⁰ Bell, Clare. "Chronology" in Waldeman 1993, pp. 363-375.

¹¹¹ He taught first at State University of New York at Oswego and then at Douglass College, Rutgers University in New Jersey.

¹¹² Glaser, Bruce. "Oldenburg, Lichtenstein, Warhol: A discussion" *Artforum* 4, no. 6, February 1966, p. 21.

aesthetic and political preoccupations, from aesthetic moments of poetic reflection controlled by the artist to confrontational politicized demonstrations of human instinct and reflexes.

Lichtenstein stated that he did not want to create introspective art but instead he wanted his art to look out into the world. In his words he was "anti-contemplative, anti-nuance, anti-getting-away-from-the-tyranny-of-the-rectangle, anti-movement and -light, anti-mystery, anti-paint-quality, anti-Zen, and anti-all of those brilliant ideas of preceding movements which everyone understands so thoroughly."¹¹³

Lichtenstein's rebelliousness was not, however, strident. Instead it used monumental formats and impersonal, almost mechanical rendering techniques to communicate a cold aesthetic sensibility which made cultural icons out of clichés of American life.

Materials, Techniques and Subjects: Having Fun with the Look of Mass Culture and Poking Fun at High Culture

References to materials and techniques abound in Lichtenstein's art and can be read in a variety of ways: as devices establishing a distance between his art and expressionistic work, as means of making connections with popular culture, and even at times as the subject matter of his art.

In the spring of 1961 Lichtenstein began boldly painting dramatic scenes copied from comics and soon was using a screen technique employed in advertising which emulated the look of mass-produced comic book art.¹¹⁴ He selected images from sources like the cartoons printed on bubble-gum wrappers to create hand-painted works on canvas which mimicked the appearance of images from mass media. His paintings deliberately emphasized the visual effects of commercial art and cartoons made for

¹¹³. Swensen, G.R. "What is Pop Art?: Answers from Eight Painters, Part I." *ARTnews* 62, no. 7, November 1963, pp. 25, 62-63.

¹¹⁴. The technique is referred to as the "Benday-dot screen technique". This is from a process of photoengraving invented in 1879 and "named after Benjamin Day, a New York newspaper engraver who utilized a series of celluloid screens with raised images of dot and line patterns to produce halftone images for printing." Waldeman 1993, n. 13, p. 16.

reproduction-- notably the dots and lines that had to be used to accommodate mechanical printing techniques. The paintings are very tidily done. Asked about the meticulous execution of his work, he disavowed any particular concern with craftsmanship in an artisanal sense, claiming:

"I guess it's gotten more refined as I went. . . I don't know why, you just get better at it. Doing it for thirty years I guess. And you can't then make it purposely rugged because that looks silly you know if you can do it the other way. And there's no-- Because you want it to look mechanical you know as though it was done by a machine, or not a person or something like that you want it to look accurate and more . . . mathematical than aesthetic."

During the same period he was also working on three dimensional pieces, using shapes derived from real mass-produced mannequin heads and machine-made cup molds in his compositions. By the mid-1960s he had developed a signature style of painting in flat, even areas of unmodulated colour with crisp edges which has remained relatively unchanged. This impersonal technique has been grouped with other reactions to abstract expressionism commonly referred to in French as *la manière froide* ("the cold manner") in contradistinction to *l'abstraction chaude* ("hot abstraction") of the expressionists.¹¹⁵

Lichtenstein's work focussed on different subjects over time, sometimes drawing on popular culture sources for the subjects (for example, in paintings of comic strips and advertising images of war and girls) or for conventions in representation. For example he did a series of works depicting mirrors using a few slanted parallel lines to indicate a reflecting surface in "a commercial art shorthand" for a mirror.¹¹⁶ He also liberally included references to other artists and to aesthetic debates.

One witty series begun in 1965 had as its subject painting techniques, embodied in brushstrokes. Brushstrokes were a symbol of gestural painting associated with the

¹¹⁵. See for example: Dubreuil-Blondin, Nicole. "La Manière Froide", *La Fonction critique dans le Pop Art américain*, Montreal: Université de Montréal, 1980, pp.119-158.

¹¹⁶. Interview with Roy Lichtenstein by Jan Marontate, March 3, 1994.

heroic introspective deliberations of abstract expressionists. As well, discussions of brushwork was a common component in formalist art historical analysis of stylistic categories. Lichtenstein depicted what were supposedly brushstrokes of lush, heavy impasto paint, oozing drips and splashes (which could be read as reference to Pollock or perhaps De Kooning), but he did this by carefully applying thin, smooth areas of colour to a linear schematic depiction of the gushing paint and motion (see Figure 14). Later he made sculptures of brushstrokes. He even made bronze female nudes based on his paintings of brushstrokes, putting campy eyes on twisted shapes reminiscent of standard poses taken by nude models as a send-up of artistic practices which promoted a simplistic view of mimesis.¹¹⁷

Above all the images of brushstrokes provided an impersonal, irreverent perspective on the formalist debates then raging. They depicted painterly artwork from a very linear point of view, juxtaposing two opposing poles of Wölfflin's theories of styles (the linear and the painterly). They exhibited an awareness of Greenberg's use of formalist notions in his analysis of abstract expressionism and its successors. An added dimension providing a sense of distance (and for some a sense of hilarity) was the fact that Lichtenstein rendered the brushstrokes using conventions from commercial art and cartoons. In other words Lichtenstein's art drew upon just the sort of kitsch that constituted the antithesis of the avant-garde aesthetics in Greenberg's definition.. The idea of the brushstrokes still made Lichtenstein chuckle thirty years after he began the series. The comments which follow were interspersed with laughter:

"it's a romantic gesture done in a very tedious way. You know, like a picture of a romantic gesture once removed. . . I love that idea. And then the sculptures of the brushstrokes get even more goofy. I mean there's no such thing as a brushstroke anyway. In the imagination if you took a brush with red and did that it wouldn't look anymore like my brushstrokes than anything else . . ."¹¹⁸

¹¹⁷. He took this a step further making chairs out of female brushstroke nudes. The chairs were exquisitely-crafted from 31 laminates of wood all with grain going in the same direction.

¹¹⁸. Lichtenstein and Marontate interview 1994.

Actually developing a way of depicting the image of a brushstroke to be recognizable as such and yet be also recognizable as a parody of comic strip posed technical problems:

"I had trouble at the beginning making it look like a brushstroke . . . I got it from a cartoon. It was somebody who was just starting to paint a fence or something. I mean it was really a cartoon, and it wasn't really a brushstroke . . . Then they looked like strips of bacon. They looked like anything but a brushstroke. . . And then I had this idea. I took the piece of the acetate and India ink and brushed it on. And you know how [the ink] kind of curls up [on acetate], and it made a much more interesting brushstroke, that's how I invented the brushstroke. And then I projected that on the first canvases I did. . . and made it a little more stylized than that but used all of the accidents and everything that happens in it, that looked like a pretty good brushstroke"¹¹⁹

Although Lichtenstein exhibits a sense of humour about his involvement with formal questions in art, his work seriously engages central issues in modernist debates about painting. In particular his work proposes a novel approach to interpretations of the two-dimensionality of painting:

"Since my subject matter is always two dimensional, I'm not depicting a three-dimensional world. . . . it isn't a view of a comic strip as though it's lying on the table and you're painting a picture of it. It's the comic strip And in that way I think there's a little extension of cubism that . . . gets depicted: flatness -- the realization that it's really being done on a two-dimensional surface and that the relationship is two dimensional even if the illusion is three-dimensional . . .

I think it's not that hard to paint two-dimensional but it's hard to paint to symbolize two dimensions . . . But there's only one thing that makes you think it's [three] dimensions and that's that you recognized the subject matter. . . There's nothing in the picture that makes you think it's three dimensions but that's hard to get across and I don't think that this has been understood particularly . . .

So all of the devices to make the illusion depend on your recognizing a thing or assuming you recognize even if it isn't right . . . -- so I think that cubism and subsequent things have really been symbolic of where the problem is. The two-dimensional problem. I could be mistaken but anyway that's the way I think of it."¹²⁰

Part of the amusing quality of Lichtenstein's art comes from his very nuanced references to artistic debates of his time.

¹¹⁹. Lichtenstein and Marontate interview 1994.

¹²⁰. Lichtenstein and Marontate interview 1994.

The "goofy" humour of Lichtenstein's work relies on complex multi-dimensional references to different levels of cultural discourse in American society after World War II ranging from highly intellectual to patently materialistic in their sentiments. Lichtenstein's art draws on post-war sensibilities with what might seem almost postmodern detachment, often treating serious subjects superficially, like war for instance. He produced lasting depictions of ephemeral events, mimicking techniques for cultural artifacts that are ephemeral as well (such as the printed ephemera he used as his sources). He also favoured depictions of immaterial events and likened the brushstrokes to his many depictions of explosions, done particularly in the context of war comics:

"An explosion doesn't really have any shape, and probably not much colour. And this thing gets to be a beautiful thing . . . I love it because it isn't anything really. I mean you can make it into something and you can even make it in porcelain enamel on steel and make it more concrete. . . . I like to show how far things really are from real and yet we just take them as reality."¹²¹

Techniques and materials are thus an important component of the messages in Lichtenstein's art, juxtaposing high and low-brow taste cultures in deceptively simple works which offer myriad opportunities for different readings.

Fine Arts Materials as Inconsequential for 'Art Values'

Generally Lichtenstein's work is done in high-quality artists' materials, often mimicking aspects of cheaper mass-production techniques, for example using hand-painted dots to imitate screen-printed dots. Sometimes industrial manufacturing techniques are used in his sculpture which are finely-crafted works in ceramic, porcelain enamel, bronze and wood using the same iconography and trade-mark palette as in his paintings.¹²² Often the works are done by specialists and technicians who follow his

¹²¹. Lichtenstein and Marontate interview 1994.

¹²². For example, he has had porcelain enamel baked on steel by a company that also does coatings for household appliances.

specifications. In painting, his materials have not varied in decades. He and his assistants paint with acrylic resin paints (like Magna), and artists' oil colours on a ground of acrylic emulsion gesso.¹²³ In order to understand the full impact of his parodies of cheaper reproduction techniques it is important to understand that his work is very carefully crafted and often made of very expensive materials. This fine artisanal quality contrasts with cheap techniques used to produce the images from mass media and popular culture which he employs.

Lichtenstein began using Magna acrylic resin paints made by Bocour Artist Colors in the early 1960s because he liked the way the synthetic medium looked. In his words

"Whether it will last a century I don't know but there seems to be less change than in oil painting with Magna. I like it . . . because the medium doesn't cloud it at all. I find it quite luminous and you know from the side it has less reflecting quality. They don't make it anymore but I can get it made."¹²⁴

Although he adopted the water-borne acrylic mediums for his grounds he continued using the oil-compatible acrylic resins because the way it handled suited his working techniques:

"I just loved Magna. I used it first -- you could get it off easily too that was the other thing . . . it was reversible. It was easy to take the whole painting apart too but that's (chuckle) and you could move your brushes around and it doesn't tend to dry out in the tube and there's a lot of things that it does but it's mostly the colour quality. . . . you could also mix it with oil if there was another colour you wanted. . ."

In discussing his choice of materials, Lichtenstein emphasized visual qualities, handling

¹²³. "People ask me every once in a while and I tell them I've been doing this since 1970 or maybe '71. I've been doing exactly the same thing. I take store-bought cotton canvas and it gets a couple coats of Liquitex gesso and then it gets underpainting white and then Magna varnish and then more underpainting white and then whatever colors go over that. I leave the underpainting white just white usually. And the other colors go over it and . . . then they get varnish and subsequent coats with varnish in between. And that's it. I don't put anything on the surface of it." In the 1960s he used commercially-prepared canvases and sometimes oil-based grounds. Lichtenstein and Marontate interview 1994.

¹²⁴. Since Magna has been discontinued he has a similar product custom-made by Golden Artists Colors.

and a more general sense of what he felt was appropriate for the type of image he was trying to create.¹²⁵ He also expressed an interest in using durable materials although he was careful to point out that he did not feel permanence was a prerequisite in the field of art:

"I try to use something that I think won't fall apart although I think that if it fell apart the next day it would have been art when I did it. I mean I don't think art is art because it's permanent. . . . I think it may be permanent as a value but not permanent as a medium any more than the dance is permanent. It simply doesn't *have* to be but if you're doing something that takes an effort and you think it has beauty or whatever you think it has, you don't want to throw it away necessarily. So . . . I try to make permanent [works of art].

But . . . there have also been many artists that because permanent [art] is commercially viable try to make it impermanent just so that isn't a commodity. That brings sort of economic theory into the art. . . .

I think art is in the unifying of the elements and whether it lasts or doesn't last is not material to that. It could be important for other reasons but not for art values."¹²⁶

Concluding Remarks about Lichtenstein on Materials

Lichtenstein's approach to techniques and materials appears superficially simple: he uses fine quality art materials and modern materials to portray images from (not of) post-war life in America. He claims to have adopted synthetic painting media for their visual, tactile and handling properties. In his work the new paints became associated with art which looked upon contemporary life in North America with amusement from a distance.

There are some interesting symbolic twists in the interpretation of the place of synthetic media in his work. For one thing, in Lichtenstein's art synthetic paints function as symbols of high culture vis-à-vis the crass newsprint-based artforms of comics and newspaper advertisements. In some readings his works are simply re-statements of

¹²⁵. As regards general appropriateness he mentioned choosing materials that had shiny surfaces for his sculpture inspired by Art Deco motifs.

¹²⁶. Lichtenstein and Marontate interview, 1994.

images from popular culture presented as high culture in large formats and expensive materials. Yet, Lichtenstein's work takes up issues related to materials and techniques on many levels, some involving complex historical arguments about aesthetics and disciplinarity in the fine arts. Sometimes he even parodied painting techniques themselves, as in his brushstroke series, making materials and techniques the nominal subject of deliberately polysemous works marked by a lively comic sensibility.

Formalism in Quebec: Guido Molinari, Claude Tousignant and Yves Gaucher

After World War II in the Province of Québec, French-speaking *culturati* developed modernist critical discourses about painting that exhibit remarkable similarities to debates about aesthetics and other ideologies in Paris and New York.¹²⁷ In the 1940s, Paul-Émile Borduas and the group of painters known as the *automatistes* had appropriated surrealist notions of spontaneity in a new approach to abstract painting.¹²⁸ The gestural, painterly qualities of much of *automatiste* painting was not unreminiscent of abstract expressionism and some Parisian "hot abstraction" (*abstraction chaude*). Yet, these French-Canadian artists appear to have had little exposure to contemporary American avant-garde abstraction and not much interest in it either.¹²⁹ The *automatistes* were only active as a group for a short time. Borduas, the leader of the group, was fired from his position as art professor due to the strong anti-

¹²⁷. The debates regarding the similarities of stylistic trends in Quebec to those elsewhere will not be considered in detail here. For key elements in discussions related to priority disputes and possible influences on abstraction in Quebec see Gagnon, François-Marc. "L'origine de l'art abstrait au Québec", *Conférences*. Quebec City: Ministère des affaires culturelles, 1979; Gagnon, François-Marc. "Mimétisme en peinture contemporaine au Québec", *Peinture Canadienne-française (débat)*. *Conférences J.-A. Sève*, Presses de l'Université de Montréal, 1971; and Hébert, Marie-Sylvie. "La réception de la peinture formaliste montréalaise (1965-1970): art et identité nationale" in Couture, Francine (editor). *Les arts visuels au Québec dans les années soixante. La reconnaissance de la modernité*. Montreal: VLB, 1993.

¹²⁸. The nucleus of the group around Borduas consisted of Marcel Barbeau, Roger Fauteaux, Pierre Gauvreau, Fernand Leduc, Jean-Paul Mousseau and Jean-Paul Riopelle.

¹²⁹. Gagnon, François-Marc. "New York as Seen from Montreal by Paul-Émile Borduas and the Automatists, 1943-1953", in Guilbaut, S. (editor). *Reconstructing Modernism: Art in New York, Paris and Montreal 1945-1964*, Cambridge, Mass.: MIT Press, 1992 pp. 130-143.

clerical stance of the *automatiste* manifesto entitled *Le Refus Global* ("The Global Refusal") published in 1948.¹³⁰ Several artists associated with *automatisme* gained international recognition, and at home in Québec their controversial statements linked modernist aesthetics to larger issues in cultural politics.¹³¹

The *automatistes* had a profound impact on discourse about modern art and society in Québec.¹³² They are prominent figures in Québec cultural history, associated with the so-called "Quiet Revolution" (*la révolution tranquille*), a period of rapid modernization accompanying the secularization of the overwhelmingly Roman Catholic educational system and the assertion of the rights of French-speaking citizens in government and the economy. Due in part to the *automatistes'* vociferous rebellion against Church and State, all forms of abstract art were reviled by champions of public morality and social order during the decade following the war. Some of the mainstream press went so far as to prohibit the reproduction of abstract works or even the description of them in articles.¹³³ Efforts to suppress the new art fueled controversy and *automatisme* came to represent "more than a style or formal innovation, rather it was an ethic, a social philosophy, a faith".¹³⁴ The number of rebellious artists eager to

¹³⁰. Signatories of the group's controversial anti-authoritarian manifesto, *Le Refus Global*, were: Madeleine Arbour, Marcel Barbeau, Bruno Cormier, Claude Gauvreau, Pierre Gauvreau, Muriel Guilbault, Marcelle Ferron-Hamelin, Fernand Leduc, Thérèse Leduc, Jean-Paul Mousseau, Maurice Perron, Louis Renaud, François Riopelle, Jean-Paul Riopelle, and Françoise Sullivan. For a reproduction of key texts related to the movement see: *Borduas et Les Automatistes. Montréal 1942-1955*. Montreal: Musée d'art contemporain, 1971. On Borduas see: Gagnon, François-Marc. *Paul-Émile Borduas*. Montreal: Montreal Museum of Fine Arts, 1988 and Gagnon, François-Marc (editor). *Paul-Émile Borduas: Écrits/Writings*, Halifax: Nova Scotia College of Art and Design, 1978.

¹³¹. Among them Borduas, Riopelle and Fernand Leduc, all of whom moved away from Quebec. Borduas for example lived in a state of quasi-exile in Provincetown and New York (1953-1955) and then Paris until his death in 1960.

¹³². Fournier, Marcel. "Borduas et les paradoxes de l'art vivant", *L'entrée dans la modernité. Sciences, culture et société au Québec*, Montréal: Éditions Saint-Martin, 1986, pp.198-234.

¹³³. Artists and journalists resorted to trickery, such as having people pose in front of abstract art in order to sneak images into publications. Even words like "non-objective" and "abstract" used in connection with art were censured by the newspaper *La Presse*. Carani, Marie. *L'oeuvre critique et plastique de Rodolphe de Repentigny*, Master's Thesis, Université du Québec à Montréal, 1982, p. 81 cited in Leclerc 1992, p. 49 and 55.

¹³⁴. Arbour, Rose Marie. "L'apport des femmes peintres au courant post-automatiste: une

espouse various readings of "advanced" art grew and by 1956 non-figurative painters had formed an association.¹³⁵

Yet, by the mid-1950s, quarrels had arisen amongst supporters of the contemporary trends in art known as *l'art vivant* or "living art".¹³⁶ One new tendency which developed in opposition to the subjectivity and exaggerated spontaneity of *automatisme* was sometimes described generally as a form of *abstraction froide* or "cold abstraction".¹³⁷ Known as the *plasticiens*, the first wave of this new approach to abstract art drew heavily on existentialist thought to arrive at formalist conclusions stressing the "plastic aspects" of painting : "tone, texture, form, line, the overall effect of the painting, and the relations among its elements".¹³⁸ Soon a second group of artists began to articulate a new theoretical framework for abstract painting influenced by structuralist ideas as interpreted by Fernande Saint-Martin, then a young scholar of semiotics.¹³⁹ This second wave of artists working in a formalist vein, known as the *nouveaux plasticiens*, included Guido Molinari and Claude Tousignant.¹⁴⁰ Other artists working with formalist notions independently of these groups emerged in the 1960s, among them Yves Gaucher. The art of Molinari, Tousignant and Gaucher

représentation critique (1955-1965)" in Couture 1993, p. 27.

¹³⁵. It was called *l'Association des artistes non-figuratifs*.

¹³⁶. For a concise account of the debates see Leclerc, Denise. *The Crisis of Abstraction in Canada: The 1950s*. Ottawa: National Gallery of Canada, 1992, especially pp. 33-56.

¹³⁷. This term was used in France in particular to highlight the contrast of the new approach with respect to the "hot" abstraction of the gestural painting styles of like that of the *tachistes* and *automatistes*.

¹³⁸. Jauran, *Manifeste des plasticiens*, 1954 cited in Leclerc 1992, p. 50. The first wave of *plasticiens* consisted of Louis Belzile, Jean-Paul Jérôme, Fernand Toupin and Jauran (Rodolphe de Repentigny), who launched the manifesto on the occasion of a group show.

¹³⁹. The new framework was based on a re-interpretation of themes from Piet Mondrian's work and notions about non-Euclidean space developed by Fernande Saint-Martin in her work on the psychology of language, non-verbal communication and literature. A version of her 1952 master's thesis was published in 1958: Saint-Martin, Fernande. *La Littérature et le non-verbal*. Montreal: Orphée, 1958.

¹⁴⁰. The group also included Denis Juneau and Jean Goguen. Other abstract artistes sometimes worked in this mode as well. For a historical survey of the approach see Carani, Marie. "Le formalisme géométrique: positions des peintres formalistes québécois" in Couture, 1993, pp.71-130.

eventually came to be associated with geometric abstraction similar in formal characteristics to some works done in American-based color field painting and op art.¹⁴¹ Like their American counterparts, the three were relatively early users of synthetic media in works which gained widespread recognition.¹⁴²

Guido Molinari: Verbal and Visual Structures in Artistic Practice

Guido Molinari (b.1933) studied art at the *École des Beaux-Arts de Montréal* and at the Montreal Museum of Fine Arts. He has been a prominent figure in Montreal art circles since at least 1955.¹⁴³ In that year (with the collaboration of artist Claude Tousignant and Fernande Saint-Martin) he opened what he has called the first gallery in Canada devoted exclusively to abstract art.¹⁴⁴ A prolific artist, he is also an outspoken critic, writer and a university art professor (at Concordia University).

Formal and Perceptual Dimensions in Painting

Molinari developed an elaborate discourse about the formal and perceptual dimensions of his works related to structuralist thought in aesthetics and social philosophy.¹⁴⁵ In his words:

¹⁴¹. They were also all clients of the same Montreal-based artist-paintmaker Michael Towe, who made Chromatech water-borne acrylics for the Montreal-based avant-garde.

¹⁴². The painters appear to have had more early success in English-speaking Canada and internationally in the beginning. The reception of their works in the province of Quebec was, however, decidedly mixed in the 1960s according to Hébert. Hébert in Couture 1993, pp. 131-169.

¹⁴³. He had been organizing shows of abstract art at the Café L'Échouerie from 1953-1955.

¹⁴⁴. It was called *Galerie L'Actuelle. 16 Peintres du Québec dans leur Milieu..* Collection l'Inventaire des créateurs. Montreal: La Vie des Arts, 1978, p. 126. Some texts mention the collaboration of Tousignant and Saint-Martin in the opening of the gallery: *Guido Molinari 1951-1961. The Black and White Paintings*. Vancouver: Vancouver Art Gallery, 1989, p. 63; and Naubert-Riser, Constance. "Marginality as a Political Stance: The Canadian Painter Jean McEwan", in Guilbaut 1992, p. 129, n. 26.

¹⁴⁵. In interview he credited the strong influence of his partner Fernande Saint Martin on his early intellectual development. A computer disk of relevant publications was created in conjunction with his 1995 retrospective at the Montreal Museum of Contemporary Art and is available through the documentation center of the museum. See also: Thériberge, Pierre (editor). *Guido Molinari: Écrits sur l'art. Documents d'histoire de l'art canadien No. 2*. Ottawa: National Gallery of Canada, 1976.

"the language of painting rests on the same structural problems as verbal language."¹⁴⁶

He often refers to the history of western art in his accounts, citing famous artists as historical precedents and he draws heavily on his reading of American critical discourse about trends in post-painterly abstraction. Fluent in both French and English, Molinari's appropriation of untranslated English-language terms for use in discussions conducted in French has placed additional emphasis on his familiarity with international avant-garde art criticism, notably the work of Clement Greenberg.¹⁴⁷ Molinari's statements, both verbal (his published statements) and visual (his art), are resolutely abstract. Many of his paintings present flat, frontal images of geometric forms rendered in black and white or in highly-saturated unmodulated colour (see Figure 15). His attention to non-hierarchical arrangements reinforces the two-dimensionality of the picture-plane. Although his work addresses concerns of American formalist thought, his version of formalism is remarkably distinctive, in particular by virtue of its references to European structuralism.

Molinari's discussion of technique emphasized the issue of relations, or what he termed "relationism" in the construction and perception of art.¹⁴⁸ He insisted on the power of perceived relations (having to do with forms, colours and scale) to the overall structure of artworks. He gave an illustration of the importance of relations for his way of painting by talking about doing a painting which was composed of a series of vertical stripes. By his account the painting evolved out of a:

Interview with Guido Molinari by Jan Marontate, June 9, 1993.

¹⁴⁶. "Mes réflexions seront inspirées par mon expérience de peintre, c'est-à-dire de quelqu'un qui, dans une très grande mesure, s'est intéressé au langage tout court, puisque le langage de la peinture repose sur les mêmes problèmes de structures que le langage verbal." Molinari, Guido. "L'écrivain a des antennes (1969)" in Théberge 1976, p. 61.

¹⁴⁷. Many terms drawn from American art appear in his discourse, for example, "push/pull" with reference to Hans Hoffman's theories regarding depth relations, "allover" and "dripping" from abstract expressionism generally and Pollock in particular, "hard edge" and "l'after image" from American discourse on Op Art.

¹⁴⁸. Molinari and Marontate interview, June 9, 1993.

"type of interrelation with exactly what I call the structure of the enunciation, which is the subject, and the variation on the theme. . . The enunciation implies a certain level of intentionality. Thus . . . the enunciation creates its [own] reaction. In other words it is like complementarity. . . . if I create a series I set forth a colour. This colour creates a response for me. . . thus in some respects it's voluntary and in others involuntary. . . [and then] the other colour is created by the reaction to the potential of the first enunciation. So I create a series in this way."¹⁴⁹

Molinari has repeatedly expressed his concern for perception of the total structure of the completed work of art. However his preoccupation with structuralist notions, visual relationships and perceptual dynamics extends to his interpretation of his studio practices.

Structural Methodology in Studio Practices

According to Molinari, his working methods endeavour to operationalize principles from structuralist thought about artistic creation. He has developed numerous specific technical devices to attain his goals, such as covering painted portions of the canvas until the entire work has been produced, and never using exactly the same colour twice. This use of such devices for setting restrictions recalls the controlled experiments of surrealists, yet Molinari insisted that his practices are grounded in fundamental notions about non-Euclidean space. He gave an example of how one of his studio techniques reflects his conceptual framework:

"I always hide the colours while working. . . . I cover the colours with paper and work only on one colour at a time. . . [and] in my painting I change the colour for each coat. I never put the same colour back on twice. It always changes according to how I see it physically once it is dry. And then, I put on another coat. Usually I give it about five or six coats. . . and sometimes I come back after the work is finished to rework one or two colours to give them a couple of

¹⁴⁹. "C'est toujours cet espèce d'interrelation avec justement ce que j'appelle la structure d'énonciation, qui est le sujet, et la variation sur le thème. . . . L'énonciation implique un certain niveau d'intentionnalité. Donc. . . l'énonciation crée sa réaction. Autrement dit c'est comme la complémentarité. Alors . . . si je crée une série j'énonce une couleur. Cette couleur me crée une *response* . . . donc d'un côté c'est volontaire et d'un autre côté c'est involontaire. . . [et ensuite] l'autre couleur est créée par la réaction à la potentialité de la première énonciation. Donc je crée une série comme ça. . . ". Molinari and Marontate interview 1993. Tape #1.

coats for adjustment. . .

You understand why I put paper over the colours (while I am working)? Because I do not want to see the relations before they are defined. . . [before the colours are all set down] there is no real relationship-- I could call it a circumstantial relationship-- ."150

Early in his career, Molinari began to use synthetic painting media. His descriptions portray the adoption of the new media simply as a means to fulfill aesthetic preoccupations. In 1955 he began to use Duco automotive lacquers, the same brand of lacquers used earlier by Siqueiros and Pollock. He recalled choosing the nitrocellulose lacquers because "I wanted to translate the fluidity of the lines in my drawings."¹⁵¹ He also pointed out that there were other characteristics about the synthetic lacquers which appealed to him for his work at the time:

"Duco isn't like oil, doesn't make marks, doesn't leave rings. . . and thus dries really like ink. But necessarily it's a black which is much deeper, very black and which is probably blacker than oil [paints]"¹⁵²

He mentioned particularly appreciating the fast-drying quality of the paints, since he was at that time running his art gallery and trying to paint as well. Duco dried quickly enough and hard enough that it could support the application of masking tape for "hard edge" abstractions in a very short time by comparison with oils. He had read about the use of Duco by Mexican artists and the abstract expressionists in American magazines.¹⁵³

¹⁵⁰. "dans mon travail je cache toujours les couleurs. . . Je recouvre les couleurs de papier et je travaille justement sur une couleur à la fois. . . [et] dans ma peinture je change à chaque fois la couche de couleur. Je ne remets jamais deux fois la même couleur. Ça transforme toujours comme je la vois physiquement une fois que c'est sec. Et là je donne une autre couche. Alors généralement je donne cinq ou six couches. . . et quelques fois je reviens après le tableau est fini pour reprendre une ou deux couleurs pour l'en donner d'autres couches pour l'ajustement. . . . Vous comprenez pourquoi je mets du papier sur les tableaux? Parce que . . . je ne veux pas voir les relations avant qu'elles soient définies [avant de poser tous les couleurs] . . . ce rapport-là ce n'est pas un rapport réel --je peux dire c'est un rapport circonstanciel--. . ." Molinari and Marontate interview 1993, Tape #1.

¹⁵¹. "Je voulais traduire la fluidité des lignes dans mes desseins"

¹⁵². "Duco n'est pas comme l'huile, ne fait pas de traces, ne laisse pas de cernes. . . et donc il sèche vraiment comme de l'encre. Mais nécessairement c'est un noir très profond, très noir et qui est peut-être plus noir que l'huile. . . ." Molinari and Marontate interview 1993, Tape #1.

¹⁵³. Molinari and Marontate interview 1993.

Molinari may have been inspired by reading about Pollock's use of lacquers (although this is not certain) but he emphasized that his subsequent discovery of masking tape for use in his "hard edge" paintings was a purely spontaneous idea he had on his own while buying Duco at an auto-body supply shop near his studio where he saw the tape for sale.¹⁵⁴ By 1956 he was using the lacquer on canvas and he began to use the tape to produce "hard edge" abstract paintings. In 1957 he also experimented on canvas using aniline dyes made for leather.¹⁵⁵ By late 1958 Molinari had begun to use Liquitex water-borne acrylics made for artists. The water-borne acrylics were well-suited to his studio techniques, accepting multiple coats of paint more easily and allowing him to work with transparency by applying thin semi-transparent coats.¹⁵⁶

Overall, Molinari portrayed his adoption of synthetic media as a way of trying to simplify his use of materials and tools in order to concentrate on the more abstract dimensions of his studio methods.

Concluding Remarks on Molinari's Approach to Technique

Molinari stressed the notion of the work of art as a perceptual event, rather than a material object, and it is perhaps this insistence on the non-material aspects of the process of perceiving art that most strongly marks his discussion of materials and techniques. He repeatedly linked his ideas about perception to the process of creation in his critical analysis. During long years of teaching studio art Molinari has developed an

¹⁵⁴. "Il y avait un magasin de matériel pour les autos, de debosselage, près de mon atelier. . Et c'est là aussi où j'ai découvert le *masking tape*. En fait le *masking tape*, c'était pour moi une innovation technique purement spontanée. . . qui est découlée de l'utilisation du Duco."

¹⁵⁵. At about this time Olitski, Noland and Lichtenstein also were experimenting with dyes in the U.S..

¹⁵⁶. The principle of "fat over lean" in oil paints (which placed slower drying thick layers on top) did not need to be respected with acrylics and additional coats of thin paint could be added without jeopardizing the painting.

account of his approach to technique which is elaborately linked with his aesthetic preoccupations and critical writing. For him modern materials in themselves are apparently unremarkable symbolically, since the material aspects of the work of art are subservient to the total structure of perceived properties of the formal relationships evoked by shapes, hues and scale. As far as discussing materials and specific techniques with other artists, although his use of modern media has been cited as a source of information by Tousignant, Molinari said

"personally I have never been very interested in talking about technique."¹⁵⁷

In Molinari's discourse about his work specific art materials are barely acknowledged, yet his adoption of synthetic materials was very early by Canadian standards and exhibited an awareness of avant-garde usages in American abstract painting at the time. This knowledge of international art trends in the 1950s and 1960s, communicated both through his many verbal statements and through his art helped to establish his recognition with his contemporaries, among them Claude Tousignant, a close colleague during the 1950s and early 1960s.

Claude Tousignant: "We Were in a Hurry to Paint"

Claude Tousignant (b.1932) studied at the School of Art and Design of Montreal Museum of Fine Arts, where he met Molinari. Tousignant then travelled to Paris where he studied briefly at the Académie Ranson. Back in Montreal he worked in close consultation with Molinari during the 1950s on shared preoccupations with space and colour. Tousignant's powerful canvases presented zones or stripes of intensely saturated colour, breaking with the muted earth tones favoured by the early *plasticiens*. He insisted on treating colour as content. His firm commitment to the two-dimensionality of picture-plane led to his adoption of large-scale shaped canvases, as in

¹⁵⁷. "Personnellement je n'ai jamais été très intéressé à parler technique"

a series of "targets" composed of concentric bands of colour much like the work of the Washington Color School in its visual effects (see Figure 16). Yet he disapproved of many color field paintings, disparaging what he termed the unstructured, haphazard "tie and dye" approach (referring to the stained effects in works by Jack Bush and Morris Louis favoured by Greenberg).¹⁵⁸ Tousseignant's work, like that of Molinari, was shown in international exhibitions of Op Art in the 1960s.¹⁵⁹ Tousseignant also resisted labelling his work "Op Art" because he felt the multiple optical effects produced by his paintings were secondary in importance to total effect of a vibrating colour field.¹⁶⁰

Less theory-laden than that of Molinari's discourse, Tousseignant's discussion of the place of materials and techniques in his work nonetheless stressed similar preoccupation with aesthetic goals and studio practices, but in more down-to-earth terms. His account provides graphic illustrations of practical and formal concerns leading to the adoption of synthetic media.

Hard Edge Painting Techniques and the Search for New Media

Tousseignant's accounts of his early experiments with synthetic media emphasize the importance of rapid drying for the working methods he began to develop in his youth. His "hard edge" painting technique made it necessary to avoid any bleeding or wet-in-wet blending of adjacent colours. By 1958 he was relying on masking tape laid over adjacent areas to define the edges of each coloured area. Eventually he adopted water-borne acrylics but, before they were available he used solvent-borne synthetics.

He recalled using the nitrocellulose automotive lacquer, Duco:

"I had tried Duco, which dries rapidly. I was looking for a paint that dries quickly because -- if you do "hard edge" painting with oil you have to wait for it

¹⁵⁸. Interview with Claude Tousseignant by Jan Marontate, June 10, 1993. Tape #2.

¹⁵⁹. They were both represented in the ground-breaking show of international Op Art, "The Responsive Eye" held in 1965 at the Museum of Modern Art in New York.

¹⁶⁰. Lamy, Laurent. "Tousseignant", in *6 Peintres du Québec dans leur Milieu..* Collection l'Inventaire des créateurs. Montreal: La Vie des Arts, 1978, pp. 157-158.

to dry and then if you put on a second coat or sometimes a third coat -- the inspiration runs out!"¹⁶¹

Like Molinari, Tousignant purchased his paints at an auto-body shop. At that time the shop mixed paints to order for clients. He recounted that this gave him considerable latitude with his choice of hues and levels of intensity:

"What was good was that at that time you could buy pure pigments. At that time [the shop made up paints to order]. If you had a Ford, I don't know say a '54, color such-and-such a number, you went with the number and they made [the paint] up there with the pigments. So I bought the pure pigments and I made mixtures with the mediums and all that."¹⁶²

At around this time he and some other young painters also did some experiments with a mixture of plastic and acetone.¹⁶³ He abandoned the experiments after one of his friends almost killed himself breathing acetone in a closed space. In the mid-1950s he and his friends also heard about experiments that the Mexicans had been conducting with plastics. This was at about the time of Gutiérrez' 1955 lecture tour. However, as he put it:

"We found [the Mexican research] interesting but it seemed fairly complicated to start experimenting on one's own with plastics.

We were in a hurry to paint and not to conduct research. That's why I started with the enamel. Then it satisfied me up to a certain point. It was a little fastidious but, hey, it worked."¹⁶⁴

¹⁶¹. "Moi j'avais fait des tableaux à l'émail d'automobile. Et j'avais essayé du Duco qui sèche rapidement. Je cherçais une peinture qui sèche rapidement parce que de l'huile -- si l'on fait du *hard edge* avec l'huile il faut attendre que ça sèche. Et puis là en donner une deuxième couche ou une troisième couche parfois. Et l'inspiration s'épuise!" Tousignant and Marontate interview 1993.

¹⁶². "Mais ce qui était bon c'est qu'en ce moment-là on pouvait acheter des pigments purs. A ce moment-là ils les fabriquaient [les couleurs]. Si vous aviez une Ford je ne sais pas '54, couleur tel numéro, vous arriviez avec le numéro ils la fabriquaient sur place avec les pigments. Alors moi j'achetais les pigments purs. Et je faisais des mélanges avec des médiums et tout ça." Tousignant and Marontate interview 1993.

¹⁶³. He recalled doing this with Jacques Hurtubise and Henry Saxe.

¹⁶⁴. "Les Mexicains avaient fait des expériences. Je pense que Liquitex prend sa source dans les expériences que les mexicains avaient faites. On avait entendu parler de ça au milieu des années cinquante peut-être. . . . On trouvait que c'était intéressant mais ça semblait assez compliqué de commencer à expérimenter soi-même avec des plastiques. On était pressé de peindre et non pas de faire des recherches. Alors c'est pour ça que moi j'avais commencé à faire des choses avec l'émail. Puis ça me satisfaisait jusqu'à un certain point. C'était un peu fastidieux mais -- ça marchait quoi?" Tousignant and Marontate interview 1993.

Working Conditions and the Switch to Water-Borne Acrylics

Tousignant found the fumes from the automotive lacquers extremely noxious, as did his neighbours. He recalled that representatives of the natural gas company were called to inspect the premises where he was painting because they thought that there was a gas leak and were worried about the possibility of an explosion.¹⁶⁵ Subsequently, he began to use less smelly products designed for home use instead of the professional line of lacquers intended for auto body specialists.¹⁶⁶ Although the product made for household use dried a bit more slowly he still found it much better than traditional artists' oil paints.

Tousignant kept looking for paints which were better suited to his working methods and less unpleasant to use when he finally discovered water-borne acrylics: "I was looking for something that dried quickly and had colour. In fact from 1956 I had started doing hard edge paintings. . . and I wanted smooth surfaces. And there it was. As soon as it came out I began using Liquitex."¹⁶⁷

At this time Tousignant was beginning to emphasize colour in his work and he maintained that the new acrylics were ideal "because the colour stayed fresh and was permanent, much more permanent than with oils".¹⁶⁸

He first learned of the water-borne acrylics from Molinari, who had purchased a set of the colours on a trip to New York. Both Tousignant and Molinari travelled

¹⁶⁵. "Ça émet des gaz. . . Je travaillais dans la cave de chez mes parents alors. Même le Gaz Naturel était venu parce qu'ils pensaient qu'il y avait une fuite de gaz." Tousignant and Marontate interview 1993.

¹⁶⁶. He switched from Duco, a piroxylene (nitrocellulose-based) lacquer to Dulux an enamel based on alkyd resins. Barclay, Marion. "Materials Used in Certain Canadian Abstract paintings of the 1950s" in Leclerc, Denis. *The Crisis of Abstraction in Canada. The 1950s*. Ottawa: National Gallery of Canada, 1992, p. 209.

¹⁶⁷. Although Levison had begun producing Liquitex in 1954 he had problems with the first batches (for example, he needed to add freeze-thaw stabilizers) and therefore it took a few years before the acrylic was available. "Je cherchais quelque chose qui séchait vite et qui avait une couleur -- En fait dès '56 j'ai commencé à faire des tableaux *hard edge*. Alors il s'agissait d'avoir un médium qui correspond à qu'est-ce que je veux. Et je voulais avoir des surfaces planes et voilà. Alors aussitôt que c'est arrivé je me suis servi de Liquitex." Tousignant and Marontate interview 1993.

¹⁶⁸. "Et quand le Liquitex est arrivé c'était idéal, surtout que la couleur restait fraîche. Et c'est très permanent. C'est beaucoup plus permanent que l'huile." Tousignant and Marontate interview, 1993.

frequently to New York at this time to visit museums and galleries, and sometimes to buy art supplies.¹⁶⁹

Tousignant continues to work with water-borne acrylics although he switched brands. Difficulties in dealing with wholesalers to obtain gallon-sized containers of the American-made product were a factor in his change of brands. Also, Michael Towe, a small entrepreneurial paintmaker began producing acrylic paints locally in 1979. Tousignant started buying acrylic paints from Towe's Montreal-based company Chromatech, consulting with Towe on the qualities and colours of the paints.

Concluding Remarks on Tousignant's View of Materials

Tousignant emphasized that his choices of materials have always been made primarily in response to his aesthetic needs and to his studio practices.¹⁷⁰ He wanted a quick-drying paint that he could use safely and he wanted something that would give him intensely saturated colours which could be applied in thin, smooth coats with adjustable shine depending on his requirements. Above all, colour is central in his work and he found acrylic paints preferable to older techniques because they do not yellow like oil paints :

"I don't understand people returning to [artist's oil paints]. The new fad is to go back to oil paints. But you know oil today isn't like it was in the old days. In the old days there were fantastic manufacturers of oil paints who took different oils to mix with different pigments. . . You can tell that the paintings of Gauguin and the impressionists are still just as fresh as when they were painted or almost. . . In this respect acrylic paints are ideal."¹⁷¹

¹⁶⁹. He also met a few artists there, although he felt that the only American artist he met whose work struck a chord with his interests was Barnett Neumann. Tousignant recalled purchasing paints from New York Central Art Supply, which was one of the first art supply stores to stock the new paints. Interview with Steve Steinberg (owner of New York Central Art Supply) by Jan Marontate 1995.

¹⁷⁰. "Pour le besoin esthétique." Tousignant and Marontate interview 1993.

¹⁷¹. "Je ne comprends pas que les gens retournent à l'huile. La nouvelle mode chez les gens c'est de retourner à l'huile. Et l'huile vous savez aujourd'hui ce n'est pas comme autrefois. Autrefois il y avait . . . des fabricants de peinture à l'huile formidables qui prenaient différentes huiles pour . . . différents pigments . . . On voit des tableaux de Gauguin et des impressionistes qui sont encore aussi frais que quand ils étaient peints ou presque. . . Alors l'acrylique c'est idéal dans ce sens-là." Tousignant and

Tousignant believes that technical issues are less important to painters today than they used to be. In his view, new paints and various related products (like gels and pastes) liberate the artist from the type of laborious experiences he went through when he was searching for appropriate media before the emergence of water-borne acrylic paints for artists.

Yves Gaucher: Technical Research and the Freedom to Act

Yves Gaucher (b. 1934) followed an independent course in his artistic development in music, printmaking and painting.¹⁷² While still a teenager he quit school to devote his energies to music, playing in jazz bands and working at a daytime office job. In 1954 he resumed his studies, enrolling at the Montreal École des Beaux-Arts (School of Fine Arts). At that time the first two years of the five-year programme there were rigidly defined and Gaucher was expelled for insubordination in 1956. Although he began to gain serious recognition in the early 1960s, his extremely precarious existence in the early stages of his artistic apprenticeship make him almost the personification of the extraordinary artistic outsider. However, eventually he became a university art professor. He also remained involved with music, and has participated in the programme in electronic music at McGill University. Gaucher's trajectory made him acutely aware of materials and tools, in part because he had to expend a great deal of effort to gain access to them. His struggles to learn techniques and get his hands on materials provide a glimpse of the obstacles facing artists working outside large centers of international art. Concurrently with these efforts, he developed a deep awareness of

Marontate interview 1993.

¹⁷² For analyses of Gaucher's pre-1980 work see in particular: Nasgaard, Roald. *Yves Gaucher. A Fifteen-Year Perspective/ 1963-1978*. Toronto: Art Gallery of Ontario, 1979; and Gagnon, François-Marc, "Gaucher" in *16 Peintres du Québec dans leur Milieu..* Collection l'Inventaire des créateurs. Montreal: La Vie des Arts, 1978, pp. 47-56.

the complex interplay between materials, techniques and conceptual issues in art.

Access to Materials, Experimentation and the Place of Technique in Artmaking

After his expulsion from art school, Gaucher worked on his own, purchasing a copy of Ralph Mayer's *Artist's Handbook of Materials and Techniques*, which proved to be an important resource to him in the upcoming years.¹⁷³ He recalled that:

"In fact with Ralph Mayer I discovered that in art it is necessary to use your own research. . . And. . . that sometimes conceptual problems were related to problems of execution. Sometimes the problems of execution . . . were because the conceptualization was perhaps not very good either."¹⁷⁴

In 1957 he began studying with master printmaker Albert Dumouchel and remained with Dumouchel until 1960 when Gaucher set up his own printmaking studio. During his first years at the École des Beaux-Arts he had little exposure to materials since the bulk of his assignments were done in gouache, although he had experimented with other materials on his own. When he returned to study printmaking, all of the printmaking materials were supplied by the school free of charge to students under the tutelage of the traditionalist Dumouchel.¹⁷⁵ Students were given fine quality papers, inks and beautifully polished etching plates from the very beginning. But eventually Gaucher felt he had to leave his teacher because he wanted to explore possibilities with the media which went beyond the conventional limits of printmaking:

"With Dumouchel you had to stick with tradition. And I was interested in letting my curiosity go -- in having a look at what you could do with printing

¹⁷³. He used (and continues to use) the 1957 edition which he had purchased in 1957. This is a revision of the 1940 original but contains very little information on synthetic media, none on the water-borne acrylic paints which had only been manufactured for a few years at that time. Mayer, Ralph. *Artist's Handbook of Materials and Techniques*. New York: Viking, 1957.

¹⁷⁴. "Avec Ralph Mayer en fait j'ai découvert qu'en art il fallait se servir de ces propres recherches. Et que la seule façon quand on avait certains problèmes —des fois les problèmes conceptuels étaient reliés avec les problèmes de réalisation. Des fois des problèmes de réalisation . . . étaient à cause du fait que la conception n'était peut-être pas très bien non plus." Interview with Yves Gaucher by Jan Marontate. June 15, 1993.

¹⁷⁵. Gaucher recalled his shock at some of the abuses he had seen, such as witnessing a student use a piece of Arches paper to dry their hands. Gaucher and Marontate interview 1993.

media."¹⁷⁶

Setting up his own printmaking studio in 1960 was not merely costly, it was extremely difficult. Many materials were simply unavailable in Montreal outside of the art school circles. As he recalled:

"If you were a disciple of Dumouchel you could get things, but if you weren't a disciple of Dumouchel you got nothing."¹⁷⁷

He purchased a press, made arrangements locally to get copper plates, and started making his own varnishes using recipes from Ralph Mayer's *Artist's Handbook of*

Materials and Techniques :

"I bought my own press and I experimented on it. Here the book of Mayer was very important too because it had all the recipes for varnishes for engraving. . . I started to make my varnishes myself. I didn't have money to buy them, to bring them in from Europe. .

I went to New York regularly to buy paper. . . and I did the gallery circuit and all that, and came back on the return bus. That saved me a lot of money because paper was a lot cheaper in New York than here.

So I got myself organized to do all these things, which after a while also allowed me to begin to question many things about the language of engraving . . . and to develop new techniques. It's thanks to Mayer in a way-- to his book-- which opened me up to going out and seeking things."¹⁷⁸

¹⁷⁶. "Parce que, avec Dumouchel il fallait rester sur la tradition. Et moi ça m'intéressait d'aller voir-- de laisser ma curiosité aller -- sur qu'est-ce qu'on pouvait faire les médiums d'imprimerie." Gaucher and Marontate interview 1993.

¹⁷⁷. "Si l'on était un disciple de Dumouchel on pouvait avoir des choses mais si on n'était pas un disciple de Dumouchel on n'avait rien." Gaucher and Marontate interview 1993.

¹⁷⁸. "Je me suis acheté ma propre presse et j'ai fait des expériences dessus. Et là le livre de Mayer était très important aussi parce qu'il y avait toutes les recettes de vernis pour la gravure. . . j'ai commencé à faire mes propres vernis moi-même. Je n'avais pas d'argent pour en acheter pour les faire venir d'Europe. À l'École des Beaux-Arts les vernis venaient d'Europe directement. Moi je n'avais pas cet argent-là. . .

Et moi j'ai commencé à faire mes vernis moi-même. Je me suis trouvé mes propres débouchées ici pour avoir les cuivres . . . j'allais à New York régulièrement pour aller acheter mon papier chez Nelson Whitehead parce qu'ils étaient les grossistes pour l'Amérique du nord. Alors j'allais à New York. J'allais m'acheter du papier et je faisais le circuit des galeries et tout ça pour revenir par l'autobus qui s'en venait. Et ça m'économisait beaucoup d'argent parce que le papier était beaucoup moins cher à New York qu'il était ici.

Alors je m'y suis arrangé pour prendre tous ces moyens-là, ce que m'a permis aussi après un certain moment de remettre en question beaucoup de choses du langage de gravure, techniques de la gravure, puis de développer des nouvelles techniques. C'est grâce à Mayer d'une certaine façon, de ce livre-là qui m'a ouvert l'esprit moi de venir chercher des choses." Gaucher and Marontate interview 1993.

During the period with Dumouchel and after Gaucher continued to do some experimentation with making his own paints as well, including trying out synthetic formulas:¹⁷⁹

"From 1958 to 1961 I did a lot of experiments with glazing, varnishes, Rembrandt's techniques . . . to see the different lights that they could give. . . and [I experimented] with heavy impasto, with stand oils and all those things. The only thing I didn't try back then was encaustic. I made gessos myself at that time. All according to Mayer. And following Mayer too [I made] varnishes and different painting vehicles to see the different effects.

Thus I tried everything to see --. . . I tried a little casein. I didn't do egg tempera -- to see a bit what [effects] all those things produced before choosing the mediums that were most compatible with what you were looking for."¹⁸⁰

Philosophy, Visions and the Choice of Medium: Sources of Information and Inspiration

Gaucher's experimentation with different materials was followed by a period of time during which he decided to focus his energies on intensive investigation of a narrower range of techniques, all the while developing a broad range of intellectual interests. He concentrated entirely on printmaking between 1961 and 1963 and returned to painting around 1964. But, in his view, the lessons he learned about the relations between materials and art while he was doing printmaking led to insights relevant to art generally:

"It's an attitude that I've carried with me . . . of taking materials and trying to make [things with them]. . . [the idea] that the materials are at my disposition rather than me being in their service."¹⁸¹

¹⁷⁹. He recalled that Henry Saxe was working with plastics. Gaucher tried it too but found them "extremely toxic". He stated that acrylics weren't available in Montreal until the late 1950s at least, remembering that, in about 1956 or 1957, Suzanne Meloche (the first person he knew who used water-borne acrylics) asked everybody making a trip to New York to bring her back some Liquitex.

¹⁸⁰. "de '58 à '61 j'ai fait beaucoup d'expériences avec des glazing, varnishes, techniques de Rembrandt. . . pour voir les différentes lumières que ça peut donner . . . puis la grosse pâte puis avec des *stand oils* toutes ces choses-là. . . la seule chose que je n'ai pas essayé c'est l'encaustique. J'ai fait moi-même les gessos en ce moment-là. Toujours d'après Mayer. Et d'après Mayer aussi les vernis et les différentes véhicules pour peindre pour avoir les effets différents. Donc j'ai tout essayé tout ça pour voir --. . . j'ai essayé un peu la casein. Je n'ai pas fait l'egg tempera. -- Pour voir un peu ce que ça donnait toutes ces choses-là avant de choisir, eh? -- les médiums qui étaient les plus compatibles avec ce qu'on recherche." Gaucher and Marontate interview 1993.

¹⁸¹. "c'est une attitude que j'avais apportée avec moi. . . de prendre les matériaux et d'essayer de faire . . . que les matériaux étaient à mon service plutôt que de moi d'être au service d'eux." Gaucher and

Gaucher's research was not limited to technical matters, but extended to other areas of profound consequence for his artistic direction. By the early 1960s, he had not only acquired technical knowledge about the mechanics of artmaking but he had developed a deep interests in philosophy and music, particularly in East Asian and Indian music and thought. During the 1950s and 1960s, he travelled to Mexico, Europe and New York. According to him, his expulsion from art school spurred him on, making it possible to come in contact with philosophical writings which were banned in Québec:

"I didn't have any difficulty leaving the School of Fine Arts. I said to myself "OK, that's fine. I'm going to teach myself."

So I went on a discovery trip about painting. It was at that point I discovered Ralph Mayer. Then I went to New York. Then I discovered museums. Then from the museums I discovered art galleries. [I discovered] a whole lot of things that weren't even discussed at the School of Fine Arts

So the whole problem-- be it on the philosophical, technical, aesthetic or social level-- I discovered all by myself. It was better that way.

Because Jean-Paul Sartre was on the Index [of banned books in Quebec]. I discovered Oriental philosophy in New York. I couldn't discover it here [in Quebec]. The books were banned."¹⁸²

In fact, Gaucher had also come in contact with some of the ideas important for his subsequent work in the library of the School of Fine Arts. He recalled a helpful librarian who guided him in his readings and introduced him to many international art magazines, in particular *Art News*, *It Is*, *Cimaise*, and a Japanese art magazine devoted to abstract

Marontate, interview 1993.

¹⁸². "Alors pour moi il n'y avait pas aucune difficulté de partir de l'École des Beaux-Arts. Moi je me suis dit "OK c'est correct. Je vais m'enseigner moi-même."

Alors là je suis parti à la découverte de la peinture. C'est là où j'ai découvert Ralph Mayer. Puis je étais allé à New York. Puis j'ai découvert les musées. Puis dans les musées les galeries. Puis dans les galeries bien, un tas de choses. Que l'École des Beaux-Arts ne parlait même pas.

Alors tout le problème, que ça soit sur le plan philosophique, que ça soit sur le plan technique que ça soit sur le plan esthétique, que ça soit sur le plan social --je l'ai tout découvert par moi. C'était beaucoup mieux comme ça.

Parce que Jean-Paul Sartre était à l'Index. Moi j'ai découvert les philosophies orientales à New York. Je ne pouvais pas les découvrir ici. Les livres étaient interdits." Gaucher and Marontate interview 1993.

calligraphy.¹⁸³ He went regularly to the library to look at new issues, especially the latest editions of *Art News* which carried reproductions from the recent shows at galleries. In his view:

"That's what led me to go to New York -- the reproductions of the art galleries [in international art magazines]. So I went to educate myself in New York."¹⁸⁴

He later began to travel further afield. On his first trip to Europe in 1962 he was able to make arrangements for direct purchases from a Parisian supplier of fine quality printmaking materials, which he had been told by Québec contacts would be impossible.

In Europe he combined practical arrangements related to technical requirements with other activities. There Gaucher attended a concert of contemporary music including work by Anton Webern which challenged his ideas about art to the core. In his words "the music seemed to send little cells of sound into space, where they expanded and took on a whole new quality and dimension of their own".¹⁸⁵ By 1964 his art increasingly focussed on reduced formal elements in an elegant, ascetic approach to perception and optical effects in large-scale acrylic paintings. (The black and white reproduction in Figure 17 fails to convey the effects of the colour but gives an example of the reduction of formal elements characteristic of Gaucher's work during this period.)

Gaucher maintained that his decision to go back to painting in 1964 after several years of printmaking was prompted by an overall attitude about the place of materials in art. He felt that painting offered the technical means which best corresponded to his conceptual goals at that time. He stated that his attitude towards materials was formed

183. Her name was Miss Ouimet [phonetic spelling] according to Gaucher. The calligraphy magazine prompted him to seek out a gallery in New York which showed Chinese and Japanese calligraphy and also had books on philosophy. From these first contacts with Zen and Taoist philosophy he moved to Indian philosophy.

184. "C'est ce que m'a amené à aller à New York-- . . . les reproductions des galeries. Alors je suis allé faire mon éducation à New York." Gaucher and Marontate interview 1993.

185. Quoted in David Silcox, "Yves Gaucher", in Townsend, Wm. (editor). *Canadian Art Today*. Studio International, cited in Nasgaard 1979, p. 20. Works in Gaucher's subsequent series of prints entitled *En hommage à Webern*, feature lines, squares and dashes arranged in a grid pattern on a white surface.

in part by the difficult circumstances he had worked in after leaving art school, which prompted him to improvise with materials, rather than being dependent on rigid ideas about traditional methods and expensive art materials alone :

"I was even able to print on toilet paper. . . That leads to a different mental attitude as well . . . in engraving I realized that the materials you use must be related to the vision you want to make. And it's not the materials that will make us discover new visions. It is the visions that must make us discover new ways of using materials."¹⁸⁶

In his view technical choices are entirely subservient to the overall artistic goals in each work:

" When I went from engraving to painting, it was because engraving no longer allowed me to develop this plastic vision any further. It was simpler to go back to painting. . . When I have something to say specifically with a medium I do it."¹⁸⁷

Qualities of Acrylics and the Philosophy of the Picture

Gaucher chose water-borne acrylics for their working properties at first, in particular the speedy drying time:

"When I went back to painting, it was natural for me to take up acrylic rather than oil paints because acrylic dried quickly and I had to go back over colours to change proportions and all that, and to work with masking tape. This wasn't practical to do with oil paint because my picture would have taken almost six months or a year to do. Whereas with acrylic, in one day you can do a lot of things. So it was [a question of] using the medium which allowed the greatest freedom to act. It was that medium. It is still that medium."¹⁸⁸

¹⁸⁶. "J'étais même capable d'imprimer sur du papier de toilette. . . ça donne des choses différentes. Ça donne une attitude mentale très différente aussi . . . là même en gravure c'est que je me suis rendu compte avec des matériaux, c'est que les matériaux qu'on utilise doivent être en relation avec les visions qu'on veut produire. Et ce n'est pas les matériaux qui vont nous faire découvrir des nouvelles visions. C'est les visions qui doivent nous faire découvrir des nouvelles façons d'utiliser les matériaux." Gaucher and Marontate interview 1993.

¹⁸⁷. "Quand je suis passé de la gravure à la peinture, c'est parce que la gravure ne me permettait plus d'aller développer cette vision plastique dorénavant. C'était beaucoup plus simple de retourner à la peinture. . . Quand j'ai quelque chose à dire spécifiquement avec un médium je le fais." Gaucher and Marontate, 1993.

¹⁸⁸. "Quand je suis retourné à la peinture, c'était naturel pour moi de prendre l'acrylique plutôt que la peinture à l'huile parce que l'acrylique séchait très rapidement, j'avais besoin de revenir souvent sur les couleurs, changer les proportions de ceci et ça, travailler avec le *masking tape*. Alors ce n'était pas pratique de faire ça avec une peinture à l'huile, parce que mon tableau aurait pris presque six mois un

Asked whether there were any symbolic associations for him in his choice of synthetic media, he explained that his choice of acrylics was based entirely on practical considerations and said that as far as he was concerned he could be using ancient materials from Egypt.

Acrylic paints were not without challenges however. Gaucher found them far colder and far less resonant visually than oils. He tried Barnett Neuman's technique of underpainting with acrylics and then finishing with oils but did not find this way of working interesting.¹⁸⁹

Gaucher remarked that he discovered parallels in the behaviour of various media in painting and printmaking. In particular he commented that the difference between oil and acrylic paints was similar to the difference which he had observed in printmaking between lithography and the more recent technique of silk-screen printing. In oil and lithography there was a sense of depth and a richness in colour which is lacking in acrylics and silk-screen printing. The new media produced a relatively flat superficial effect. In Gaucher's view this forces the artist to work with colour mixing, in order to attain complex harmonies through variations in saturation, hue and tone.

Since delicately nuanced harmonies are at the core of much of his work, colour is important to Gaucher. In this regard he commented on a feature of working with all artists' paints, but which he felt is particularly noteworthy in the case of acrylics : the fact that each brand offers a characteristic palette and that the manufactured colours behave differently in combination. For this reason he has tended not to change brands often. As he put it:

an à faire. Tandis qu'à l'acrylique dans une journée on peut faire beaucoup de choses. Alors c'était d'utiliser le médium qui me permettait la plus grande liberté d'action. C'était celui-là. C'est encore celui-là." Gaucher and Marontate 1993.

¹⁸⁹. Similarly with encaustic, he found the technique too cumbersome. In his words "L'encaustique avec le cire d'abeille. Je trouvais que c'était intéressant comme surface que ça peut donner, mais il y avait trop de cuisine technique pour que ça m'intéresse. C'est trop compliqué techniquement." Gaucher and Marontate interview 1993.

"The problem is that, anyhow, it takes a certain amount of time to understand the structure [of the mixtures of pigments] of one brand of paint or another. . . . And when I'm in a period of intense work I don't much like unpleasant surprises. Because you get to a point where you know exactly that if you take that [colour] and that [colour] you'll get that [colour]. Whereas to start with a new brand of paint you don't know."¹⁹⁰

He began with Liquitex, but like other Québec painters, started looking for other brands when the company stopped selling gallon-sized containers in the province. He was approached by a distributor from Selectone, a Toronto-based commercial paintmaking company that produced a line of artists' paints. Lured by a good discount he used some of their paints although he did not find all of the colours acceptable. The Montreal distributor stopped carrying these paints and Gaucher began purchasing Chromatech paints from Michael Towe. The locally-produced paints were conveniently available at reasonable prices and Towe was willing to produce custom-made mixtures which suited Gaucher's requirements. Although Gaucher always mixed his own colours, Towe was amenable to making paints "to measure" for Gaucher, adjusting the reflective qualities of the media to arrive at the very matte appearance which Gaucher sought.¹⁹¹

General Societal Attitudes towards Technical Training

Overall, Gaucher maintained that the values of the socio-historic context in which he was raised are to some extent responsible for his strong-minded independent struggle to learn about technical skills and to study philosophical approaches which were forbidden or inaccessible in Québec. On the matter of technical skills, Gaucher commented that there was little emphasis on learning about techniques and materials of

¹⁹⁰. "Le problème c'est que ça prend quand-même un certain temps de comprendre la structure [des mélanges de pigment] d'une marque de peinture plutôt qu'une autre. . . . Et quand je suis dans une période de travail très fort je n'aime pas beaucoup avoir des mauvaises surprises. Parce qu'on arrive à un certain moment où on sait exactement— je sais que si je prends ça plus ça je vais avoir ça. Tandis que commencer avec une nouvelle marque de peinture on ne sait pas." Gaucher and Marontate interview 1993.

¹⁹¹. Gaucher and Marontate interview 1993. Interview with Michael Towe by Jan Marontate, April 16, 1993.

painting in art school. But in his view this lack of interest in technique was a widespread phenomenon in society at the time he was growing up:

"It wasn't only in the arts. I recall that when I was about 14 or 15 I wanted to learn to play tennis. So I was given a racquet, my grandfather's old tennis racquet . . . and three old balls and . . . a pair of running shoes. Then I was told, "you have two serves. . . Here are the limits of play. Here's how you score." That's it! Today . . . I see 5 year-old kids beginning with lessons on racquet technique . . .

But the whole society was like that. So it was a society that shaped us. Society raised us to be independent unto ourselves in a way. It forced us to be."¹⁹²

Concluding Remarks about Gaucher on Materials

Gaucher's stories provide rich testimony about the obstacles he faced and his determination to overcome the isolation he experienced. Printed media, like handbooks and art magazines provided crucial information and inspiration. His technical research led him to realize that it was important for artists to conduct their own research on a variety of levels, ranging from philosophical and aesthetic through technical. He experimented widely with both traditional and modern techniques and enthusiastically embraced new materials, including synthetic painting media when their characteristics suited his needs. However, in his discourse about artmaking, techniques and materials are always subservient to conceptual goals. His articulate and elegantly simple view of the place of materials in his art is grounded in his struggle to access and master the technical means for rendering his visions :

"What I want to do is to develop the image. What I want to develop is the

¹⁹². "Ce n'était pas seulement dans les arts. Je me rappelle qu'à l'âge de 14 ou 15 ans je voulais jouer au tennis. Alors on m'a donné la raquette de tennis de mon grand-père -- lui il ne s'en servait plus puisqu'il en avait une autre -- ces trois vieilles balles et --vous savez --une paire de *running shoes*. Puis on m'a dit, voilà, t'as deux services --il faut servir là et là-- puis répondre ici -- ça, ceux sont les limites pour jouer. C'est la façon qu'on va pointer. Paff. Ça y était. . . Il n'y en avait pas de technique. Aujourd'hui --moi je joue au tennis, moi. Je regarde les jeunes à l'âge de cinq ans qui commencent à avoir des cours -- comment manipuler la raquette et puis . . . Mais c'était toute la société qui était comme ça. Alors c'était une société qui nous formait. La société nous formait d'être indépendants nous mêmes en quelque sorte. Ils nous forçaient de l'être d'une certaine façon." Gaucher and Marontate interview 1993.

philosophy of the picture and the medium must follow."¹⁹³

Alex Colville: Modern Technology and the Ethos of our Age

At the same time that various avant-garde movements were gaining recognition in New York City and Montreal, artists continued to create works in other modes and other places. Even though representational painting was associated with retrograde taste cultures and amateurs by dominant voices in art criticism during the two decades after the war, a small contingent of figurative artists assured a continuous presence of alternative voices on the international art market and Pop art prompted a reassessment of some forms of representational work. Beginning in the early 1970s various approaches to representational painting came to be reconsidered as part of a new wave of "avant-gardes" focussing on narratives, notably figurative painting, photorealism and neo-expressionism.¹⁹⁴ The re-appraisal of the position of contemporary representational work heralded a new acceptance of some realist painters in high-brow taste cultures. In fact, numerous realist painters had been quietly pursuing international careers in the intervening years, among them Canadian painter Alex Colville.

Alex Colville (b. 1920) creates precise, ambiguous, neo-realist paintings and prints (see Figure 18). After completing a bachelor's degree in fine art he served as an official war artist in the Canadian military during World War II. He taught art at his *alma mater* Mount Allison University in Sackville New Brunswick from 1946 until 1963 when he resigned to paint full-time. His austere, often sensual images won early

¹⁹³. "Ce que je veux faire c'est développer l'image. Ce que je veux développer c'est la philosophie du tableau et le médium doit suivre." Gaucher and Marontate interview 1993.

¹⁹⁴. In an analysis of the social and economic institutional framework for various artistic styles, Crane points to the importance of increased opportunities for funding. Alternative markets for artworks in regional museums and corporate collections allowed for a decentralization of art management and greater heterogeneity in art forms, due to a more diverse set of publics. Yet even in the mid-1980s New York still "retained its position at the center of the gatekeeping system." Crane, Diana. *The Transformation of the Avant-Garde. The New York Art World, 1940-1985.*, Chicago: University of Chicago Press, 1987, p. 136.

favour in international markets, particularly in the U.S. (notably in New York) and in Germany where his work was sometimes seen as a contemporary version of "magic realism" or "high realism".¹⁹⁵ Drawing on scenes from his own surroundings, Colville's images frequently portray one or two figures or animals in arrested motion or in contemplation in an ambiguous natural setting. His oeuvre is somewhat reminiscent of the work of American realist Andrew Wyeth by virtue of its independent development, its subject matter, its meticulous technique and small scale.¹⁹⁶ Similarities can also be drawn between his images and the intimate nudes of Philip Pearlstein. However, Colville cannot easily be seen as a member of any group since he has always worked in relative isolation, living in small towns in the Maritime provinces, although he has travelled extensively.

Conservative in style and choice of subject, Colville is an innovative technician, re-interpreting classical painting techniques using new materials. Like all of the painters considered in this section he was a relatively early user of acrylic paints. Colville's discourse on materials treats his practices in the context of his own aesthetic preoccupations and provides insights into ways he gained access to information despite his geographic remoteness.

The Search for New Materials: Sources of Information and Inspiration

In part because of his relative isolation, the history of Colville's use of various painting media and sources of information about new materials is easier to pinpoint than that of artists in active art centers. During his early years, as a student and war artist,

¹⁹⁵ Burnett, David and Schiff Marilyn. *Contemporary Canadian Art.*, Toronto: The Art Gallery of Ontario, 1983, pp. 161-166. See also Reid, Dennis. *A Concise History of Canadian Painting*, Toronto: Oxford University Press, 1973, p. 266 and Burnett, David. *Colville*. Toronto: Art Gallery of Ontario, 1984; and Duval, Paul. *High Realism in Canada*. Toronto: Clarke, Irwin and Co. 1974, pp. 62-74.

¹⁹⁶ He met Wyeth during the early 1950s through contacts at the Hewitt Gallery in New York which represented Colville. Interview with Alex Colville by Jan Marontate, November 1992.

Colville had used oils and watercolours "because that was the conventional thing to do".¹⁹⁷ Aware of his lack of technical training and desirous to learn more, he avidly read artists' handbooks which began to appear in increasing numbers in the 1940s, consulting works by art technician Ralph Mayer, Max Doerner and treatises on historical techniques.¹⁹⁸

By his account, his interest in new materials originated in a dissatisfaction with the materials and techniques he was using, and a desire for different working qualities and visual properties. By the late 1940s he was actively seeking new materials for his painting. He remembered how much he had enjoyed working with watercolours as a war artist in the field as he became increasingly dissatisfied with oils :

"For one thing I never liked working on canvas. I always liked working on a solid thing. So immediately this suggests tempera painting . . . You've got the solid board to paint on. You've got the fast-drying pigment. You've got the possibility of some kind of transparency either with something like egg tempera which of course I did use too on a few occasions. Or the possibility of glazed tempera and all that kind of thing so that I guess that's what drew me to it."¹⁹⁹

Another possible source of inspiration for him to try tempera techniques may have been exposure to other artists' work through contacts with his New York gallery.²⁰⁰ On visits to New York he had admired the work of George Tooker and Andrew Wyeth who both worked in egg tempera. Colville experimented with egg tempera, relying on artists' handbooks and adapting medieval techniques. Yet generally Colville depicts his experimentation with new materials as independent of other artists:

"none of the artists I knew used casein tempera or, for that matter later,

¹⁹⁷. Colville and Marontate interview 1992.

¹⁹⁸. He particularly recalled using Mayer's book and a works by Yale professor Daniel Thompson who had studied artists' techniques and worked with British conservators while at the Courtauld Institute in England : Mayer, Ralph. *The Artist's Handbook of Materials and Techniques*. New York: Viking Press, 1940; Thompson, Daniel V. *The Practice of Tempera Painting, Materials and Methods*. New York: Dover 1962 (reprint of 1936 original publication); and Thompson, D.V. (with foreword by Bernard Berenson). *The Materials and Techniques of Medieval Painting*, New York: Dover (1956 reprint of 1936 original publication).

¹⁹⁹. Colville and Marontate interview 1992.

²⁰⁰. In the early 1950s he was represented by the Hewitt Gallery.

acrylic."²⁰¹

Unexplained creative impulses are cited in Colville's story of his renewed search for different materials. He recalled that "for some reason which is not quite clear to me I began to want to use glazes" which prompted him to try different recipes for emulsions. Slightly later he began to use casein emulsion paints made by Shiva, which were very popular in the late 1940s and early 1950s. By the mid-1950s he was also painting with an early oil-compatible synthetic medium manufactured by the F. Weber company in combination with artists' oil colours.²⁰²

Colville learned about water-borne acrylic paints made for artists in 1962 from a part-time student who had a Ph.D. in physics and worked for an aircraft company.²⁰³

Colville recalled :

"he told me that they had done experiments in the aircraft business where of course there are tremendous degrees of temperature fluctuation -- ice, snow and everything you can imagine, gasoline and oil. . . and they had found that . . . acrylic paints were the most durable, more so than what used to be called enamels. And he was using this Liquitex Acrylic Polymer Emulsion. So I thought, well, this sounds good because I would have all the advantages of rapid drying, and so on."²⁰⁴

Colville was attracted by the qualities of the new paints on a number of levels, aesthetic and pragmatic. He liked their flat qualities and the fact that they could be used on board with water. Also they were relatively simple to use compared to tempera and

²⁰¹. Colville and Marontate interview 1992.

²⁰². At this time he used Weber's Permalba White and a medium called Res-N-Gel which was described by Mayer as a "gelatinized synthetic resin". Permalba is a brand name used for both conventional oil colours and synthetic paints by the company. The Weber company was based in Philadelphia, also the home of the Rohm and Haas company which had patented and manufactured many of the acrylic resins and emulsions used by other artists' paintmakers at the time. The Weber company papers, including formulas, were purchased by the Getty Institute in the early 1990s and may eventually be made accessible to scholars. Unfortunately most records of the Weber Company for this period were unavailable at the time of research for this project because of administrative problems at the Getty Conservation Institute. See also Mayer, Ralph. *The Artist's Handbook of Materials and Techniques*, 2nd Edition, 1957, p. 660.

²⁰³. The student, who Colville described as a "serious amateur painter" was Glen Adams and at the time he worked for Canadair.

²⁰⁴. Colville and Marontate interview 1992.

emulsions which he had been mixing himself:

"I can paint with egg tempera. But I think, why go all through that business of holding the egg, and you know draining a yoke and all that stuff, and mixing the dry pigments . . ." ²⁰⁵

But first he was concerned about the advisability of their use for art and decided to seek the advice of experts on the permanence of the new media.

By this time, Colville had begun to consult conservators about materials and techniques, a practice he continued. ²⁰⁶ In his words:

"I had read more or less everything I could get my hands on about painting media."

Interested by artists' acrylics, Colville was making a trip to New York and decided to approach an American authority on artists' materials, Ralph Mayer:

"It happened that I had an inquiry -- a new dealer in New York had written me saying that they wanted to see me and think of handling my work. . . So I went to New York in the late autumn of '62 . . . [and]

At the same time I went to see Ralph Mayer. I phoned Mayer . . . and I said that I was a serious professional painter and that I was very interested in materials and techniques, and that. . . I had used his book for years. Really I had, I had almost worn the thing out.

You see there was no-one around with whom I could talk about this stuff and almost nobody except the conservator at the National Gallery knew anything about his kind of thing at all. Most artists know absolutely nothing about the stuff they work with." ²⁰⁷

Colville paid Mayer an hourly rate for their conversation about synthetic media. ²⁰⁸

Surprisingly, given Mayer's ongoing doubts about synthetic media and his disputes with paintmaker Henry Levison (who manufactured the water-borne acrylic emulsion paint

²⁰⁵ Colville and Marontate interview 1992.

²⁰⁶ He mentioned consulting several conservators, in particular Mervin Ruggles at the National Gallery of Canada and Ian Hodgkinson, former professor of painting conservation at Queen's University in Kingston, Ontario.

²⁰⁷ Colville and Marontate interview 1992

²⁰⁸ "First of all I remember I talked with Mayer about this Res-N-Gel and my use of it. And what Mayer assured me -- I was relieved to hear this -- he said as long as you -- if you are using a gel-like medium, the important thing is always have the pigment dominating -- you know try to have the proportions two to one, two parts pigment to one part of whatever the medium is, and you are likely to get a reliable paint film. So I was relieved about that and in fact the paintings from that period have stood up very well. . . ." Colville and Marontate interview 1992.

Liquitex), Mayer endorsed acrylic emulsion paints in his private conversation with the artist. Colville recalled:

"Mayer and I got onto the subject of Liquitex. Now he knew, and I think was quite a close friend of [Henry Levison] the guy who had developed Liquitex. . . . So what Mayer told me was, to boil the thing down, Mayer said, "every evidence that I have and that it is possible to get without actually waiting for a hundred or two hundred years, every device we have done to accelerate the effects of aging and all of the things we have done with light and with temperature fluctuations and all that, indicate that acrylic polymer emulsion is the most permanent artist's medium that has ever been used."²⁰⁹

Colville purchased acrylics at once and began to use them the next month which was January 1963. He continued to use synthetic media (primarily acrylics, but also sometimes alkyds in printmaking) although he changed brands several times.²¹⁰

Modern Materials, Traditions and Professionalism

In Colville's view, using synthetic media changed the reception of his work for some of his public. He felt that both esthetes and less-informed members of his audience found his departure from established traditions and conventional materials difficult to understand:

"I think some people are kind of shocked at my use of acrylic. You know the ordinary, so-called man in the street thinks a genuine oil painting is pretty hard to beat.

And then among tempera painters, purists of course think only egg tempera is OK."

However, for him, the very modernity of new techniques and materials was a powerful element in their appeal. Speaking of acrylics he recounted that:

"I first heard of it being used on airplanes, and I thought -- this is great you

²⁰⁹. Mayer also gave the artist specific instructions about application techniques. One guideline was to "always have the pigment dominant" when using gel or medium. Another piece of advice offered by Mayer was to use the same type of medium throughout the work. Colville and Marontate interview 1992.

²¹⁰. In about 1980 he stopped using Liquitex because he felt that the quality of the paints had gone down. Subsequently he used Winsor and Newton acrylics but poor service and difficulty assuring reliable supplies prompted him to change to Golden and Lascaux products. Colville and Marontate interview 1992, and Conversation with Alex Colville and Jan Marontate, September 1994.

know, here I am using something that has been created in this second half of the century and I just liked this idea, the same way I used the silk screen printing technique rather than the more kind of classic ones you know-- engraving and that kind of thing."

Colville placed his interest in technical matters and his drive to further his knowledge about new options in the context of his own views of professionalism: his commitment to craftsmanship, and disgust with artists who do not make an effort to learn about materials and techniques in order to produce lasting works. On the matter of permanence he recalled a disagreement he had had with a professor of art conservation when he had been invited to talk to a class of students in painting conservation²¹¹:

"I was emphasizing to them my feeling that artists should work in permanent materials. . . . I have always been very careful, although I had made mistakes, they were never conscious or deliberate mistakes. They were the result of ignorance or whatever. . . . misjudgement . . . I was emphasizing my very strong feeling that art should be permanent. . . . Hodkinson [the professor of conservation], somewhat to my surprise--this was a very casual seminar thing you know-- said that in his opinion . . . the creativity of an artist should not be inhibited by concerns with permanence. . . . He felt that the creative impulse should as it were, leap over these possible impediments.

[That was] something that I simply don't agree with. I mean. I haven't found it inhibiting. . . . I haven't found my concern with permanence, with what you might call 'proper technique', any kind of an impediment."

For Colville then, technical concerns about durability and permanence are not an impediment but rather one of the challenges which distinguishes what he refers to as the "professional" artist from amateurs.

He also related his interest in "proper technique" to a modernist aesthetic governing both the practice of painting, and the art object:

"I suppose this [preoccupation with proper technique] is related to the conviction I have that most amateur painters use too many pigments. I think the less you use -- you know it's the old Mies Van der Rohe idea of "less is more" kind of thing, which I would apply in a number of different ways. But I think it's one of the challenges."

For him, the development of simple, elegant techniques to create enduring work is an

²¹¹. This was at Queen's University in a class given by Ian Hodkinson.

integral part of the professional artist's job.

Yet Colville's focus on modern materials has symbolic and ideological connotations as well. He expressed his desire to make art within the context of his own time. Colville's confidence in the potential of positive change through knowledge and technological innovation can be seen as a manifestation of the postwar trust in scientific knowledge and rigorous experimentation. To him, using modern techniques makes sense because they represent beneficial advances for artist's media and tools. According to Colville, his own enthusiasm for synthetic media is grounded in his belief in the positive, cumulative evolution of technical knowledge. He combined this reasoning with a sensibility about behaving in a way that is appropriate for one's time.

In his words:

"Why live in the modern age? . . . would I actually write with a quill pen? . . . The answer is no. I think it's ridiculous.

So you know, you kind of accept, at least I think one should accept the age in which you live. As it were you buy the ethos of the age, it seems to me. Unless of course you think that there's something terribly wrong with it . . . and there I think things that I think are terribly wrong with the ethos of our age, but they aren't these technical things, these sort of engineering kind of things."

Colville thus linked his experimentation with new materials and techniques to more general beliefs about the evolution of knowledge and culture in society. From this perspective modern materials may be seen as improvements over older ones, provided they are carefully chosen, properly used and appropriate.

The Relationship between Craftsmanship and Intellect in Artistic Practice and Traditions

In spite of a deeply held commitment to modernist aesthetics and modern ways of working, Colville also placed his interest in techniques in the context of historical precedents and broader issues in artistic practice. He discussed the example of Palladio, who started out as a stone mason and was given a good education with the son of an upper class benefactor. Both artisanal and intellectual training had prepared Palladio to make a contribution to the arts, allowing him to

cross social boundaries.

Reflecting on the place of artisanal skills and intellectual pursuits in artistic practice, Colville thus came to the subject of the relative social status of art forms. Colville recalled his reading of Sir Joshua Reynolds' views that a writer would tend to have a higher social position than a painter, and painters a higher position than sculptors due to the perceived laboriousness of the work involved with each respective art form:

"Because a sculptor was very much a workman, you know-- a kind of, not a serf, but certainly someone who worked and got dirty and so on. I think in Cennino Cennini's thing, or somewhere in the 14th century, there is something in which the writer says how you could paint in tempera with velvet on your back - in other words you can wear expensive clothes and paint in tempera -- unlike the fresco technique where you are a workman, you know, basically working in coveralls because the stuff is lime, water and plaster."²¹²

However in Colville's opinion, technical skills and knowledge (associated with artisanal labour) are important components of the artist's responsibilities. He proposed that, like Palladio, the artist must find an equilibrium between craftsmanship and intellect :

"to me the ideal thing is the combination of artisan and intellectual. . . . So that I think if you're too much of the intellectual and you lose that side I consider this bad. If you're too much of an artisan and have basically no brains you are simply an artisan, a tool really

One of the . . . University mottoes that I like . . . is the Massachusetts Institute of Technology motto which is "Mens et manus", minds and hands."

Concluding Remarks about Colville on Materials

Colville's discourse on materials and techniques combines concerns about artistic tradition with a commitment to innovation. Based on careful study and systematic

²¹². Here Colville refers to *Il libro dell'arte*, a technical treatise on painting based on manuscript copies of a work purportedly written in Padua by Cennino Cennini da Colle Valdelsa. The original dates from about 1437 and contains detailed information about painting materials and techniques, notably tempera techniques. An English-language translation was done in light of 20th-century knowledge of painting technology by Daniel V. Thompson in 1933 and published as *The Craftsman's Handbook*. Thompson's work was re-issued by Dover press in 1954 and widely distributed. For a discussion of various translations see: Mayer, Ralph. *The Artist's Handbook of Materials and Techniques*. New York: Viking, 3rd Edition, 1970, pp. 689-690. See also footnote 131 above.

application, his studio practices reflect both pragmatic and aesthetic preoccupations. He has adapted historical techniques to modern media, consulting art conservators and technical experts in search of advice about state-of-the art scientific knowledge. His quest for new media and techniques was spurred by a dissatisfaction with traditional oil paints, both the way they looked and the way they handled. But the appeal of synthetic media goes beyond visual and tactile properties, taking on symbolic connotations in his testimony. For him, modern materials represent the potential of technology and science for making positive contributions to life and culture. The new media hold the promise of providing simple, more elegant and lasting means of artmaking. In Colville's view it is the duty of the professional artist to endeavour to make enduring art through a combination of craftsmanship and intellect. The search for new materials to provide solutions for artistic problems becomes, by extension, professional obligation as well as an expression of aesthetic impulses.

Some Themes in High Culture Discourse Related to Materials in the 1950s and 1960s: Overview of Reflections by Early Users of Acrylics

In-depth interviews with artists whose work was recognized by critics, other art professionals, connoisseurs and collectors as high culture art in the late 1950s and early 1960s provide a different perspective for the study of artistic practices and the appropriation of synthetic media. Certainly the new paints, especially the water-borne acrylics were also used by lesser known artists and by students and amateurs as well.²¹³ Yet it was the use of the new media in art intended for elite audiences and institutions (such as museums and galleries, forms of organization with articulated ideologies) which legitimated synthetic paints for use in art.

The life stories summarized in this section focus on artists' accounts of the

²¹³ This was in particular the case of water-borne acrylics because they provided relatively inexpensive, odor-free alternatives to oil and turpentine painting systems and were easy to clean up by comparison.

history of their practices and on their ideas about the place of materials and techniques in their work. The use of the life story approach for soliciting the information encouraged the artists to structure their accounts around events related to their own biography and socio-historic context.²¹⁴ In telling their stories the artists did not strictly adhere to chronological presentations, yet their discussions remained grounded in their own experiences, in their own histories as it were.

Many of the artists appeared not to have discussed technical issues before in exactly this way, yet in most cases they were accustomed to presenting themselves and their artistic trajectories in interviews. All of the artists had also talked about themselves with art students in classroom situations. During these experiences they had developed ways of discussing themselves as artists and their art which emphasized themes important to them. In some instances their stories could certainly be considered a 'crystallization' of discourse, since they sometimes repeated statements they had made previously in other connections. The accounts tended not to follow a linear temporal development, but rather to associate events and issues in different ways, often according to themes the artists wished to emphasize (see table).

Table 9 in Appendix B summarizes some of the main themes raised. Before discussing the themes a few general comments about the similarities and differences in the biographical matters and socio-historic context of the artists will be considered.

Generational Effects and Social Conditions For the Practice of Art

The artists presented in this section achieved recognition by an international elite while producing art in dramatically different micro-contexts (working in New York City, Washington, Montreal and the Maritime provinces) yet their itineraries share some surprising features. The period from the late 1950s through the mid-1960s was an

²¹⁴. This was particularly helpful for establishing dates.

important one in the itineraries of all of the artists interviewed. Coincidentally perhaps, this is the period when artists were making the transition to synthetic painting media which were becoming more readily available.²¹⁵ It was also a time of transformation in the reward systems for living artists with increasing opportunities in an expanding art market and a growing job market for art professors, although growth dropped off thereafter.²¹⁶ Yet, by this time communitarian ideals from the Depression had given way to a period of socio-political retrenchment in the U.S. marked by McCarthyist anti-communist purges and psychological *Angst* associated with an increasingly anxious society and embodied in new discourse about the nature of subjectivity.²¹⁷ In Québec, rapid social changes produced what has been described as a 'Quiet Revolution' in personal and collective life experiences.²¹⁸ The Maritime provinces were also confronted by modernization and massive emigration. Increased emphasis on the uprooted individual thus marked all of the social contexts, though in different ways, and

²¹⁵. In fact as we have noted earlier, a 1963 survey of 195 Canadian artists by conservator Nathan Stolow chose 1958 as a reference point for his study of the use of traditional and "newer" techniques. The statistical results published show drops in all traditional techniques, the highest being oils (-27%) and watercolours (-18%). Increases in the use of synthetic media, including media not intended for artists' use were also noted. The methodology for reporting the results makes the changes difficult to assess in part because 14 categories of new techniques are compared to 7 categories of old ones. The results are published in connection with curator Marion Barclay's technical essay for an exhibition catalogue. Leclerc, Denise (with a technical essay by Marian Barclay), "Technical Appendix A: Techniques of Canadian Painters before and after 1958 by Nathan Stolow," *Crisis of Abstraction in Canada*, Ottawa: National Gallery of Canada, 1992, p.228.

²¹⁶. Crane, Diana. "Avant-garde Art and Social Change : the New York Art World and the Transformation of the Reward System 1940-80" in Moulin, Raymonde. *Sociologie de l'art*. Paris: Documentation Française. 1986. pp. 69-82 and Crane, Diana, *The Transformation of the Avant-Garde*, Chicago: U. of Chicago Press. 1987, pp.19-42.

²¹⁷. In this regard, Michael Leja has developed a theory of the new subjectivity which emerged after the war in cultural discourse which he calls the 'modern man discourse' and relates to the construction and reception of the modern artist in the New York School. Leja, Michael. *Reframing Abstract Expressionism. Subjectivity and Painting in the 1940s*. New Haven: Yale University Press, 1993.

²¹⁸. In a remarkable series of studies conducted about the transformation of Quebec society during this period researchers found that even oral discourse gave evidence of profound socio-psychological changes. Respondants recounting their lived experiences suddenly and independently referred to earlier events using "we" and then suddenly began using the first person singular, indicating a trend to individualization in Quebec society. Gagnon, Nicole and Jean, Bruno, "Les histoires de vie et les transformations du Québec contemporain", *Sound Heritage*, vol. 4, n. 1, 1975, pp. 56-63.

this emphasis is associated with increasingly individualistic discourse about practices in the arts. During this time too new approaches to subjectivity marked strongly individualistic depictions of the artistic career. The histories of the artists' experimentation with new techniques and adoption of synthetic painting media are therefore intertwined with a relatively stressful, if exciting epoch in each of their lives as the reception of their work became increasingly favorable and rewarding.

In some respects, the similarities in the timing of the painters' experimentation with new media may be simple matters of the coincidence of commercial availability of products and periods of intense work by the artists during the same decade. All of the painters except Colville (b. 1920) and Gaucher completed (or stopped) their studies in art in the early to mid-1950s in spite of almost 20 year difference in age between the youngest interviewee (Poons) and oldest (Colville).²¹⁹ Noland (b. 1924), Olitski (b. 1922) and Lichtenstein (b. 1923) served in the U.S. military during World War II and completed their schooling after the war, benefitting from the G.I. bill. Colville served in the Canadian forces during the war but he had completed his studies prior to his military service. Two of the younger painters, Poons and Gaucher (b. 1934), did not complete formal studies in painting. These two were also very involved with music, Poons as an aspiring composer and Gaucher as a performing musician. Noland, Olitski and Lichtenstein had also significant contacts with musicians, composers and performing artists (in Lichtenstein's case he was literally a performance artist).

Contact with other art forms, transformations in dominant stylistic trends within painting and changing ideas in society about the place of art also form and inform the artists' histories.²²⁰

²¹⁹. Gaucher was expelled from the School of Fine Arts in 1956. He did however return the following year to study printmaking and remained there until 1960.

²²⁰. See Crane 1986 and more generally Wright, David H. "Style in the Visual Arts as Material for Social Research", Social Research, 45, 1978, pp. 130-152.

Practical Issues and Access to Information

One common set of themes related to the choice of materials and techniques raised by all the artists revolved around practical issues. Working qualities of media, cost, health, comfort, availability and reliability were issues that influenced decisions. Periods of penury were common, in the early stages of careers in particular and synthetic media were often cheaper than artists' oils.

The formal properties of work by prominent painters in the 1960s use the qualities of synthetic artists colors to great advantage. Nonetheless it should be noted that many of the effects possible with synthetic paints may be obtained, in principle, with traditional oil colors. In many cases, artists continued to work in traditional media when they started working with synthetics. The distinction between the new media and older ones sometimes can be reduced to the ease with which a particular effect can be obtained. For example, the rapid drying of water-borne acrylics allowed painters to create large paintings in thick impasto which dried in a fraction of the time of oils. This rapid drying facilitated the application of distinct zones or marks in a limited time period, permitting the rapid execution of works which conserved a certain type of gestural spontaneity depending on the grounds. Yet this "practical" feature may have had an impact on the aesthetic evolution of the artists' work, since the rapid drying of the new media allowed the artist to produce more works. Further, by allowing painters to work through ideas more quickly they allow for a rapid evolution in painting styles. The capacity of synthetic paints to adhere to diverse surfaces and to accept admixtures of varied substances for textural and visual variation was of interest for some artists too, allowing them to extend the possibilities in their use of grounds..

But information about techniques and materials was difficult to access (see Table 10 in Appendix B). The artists all depicted periods of considerable effort in searching for materials suited to their perceived needs, particularly in the early stages of their careers. By far the most common source of inspiration and information came from

looking at artwork done by others. None of the interviewees recalled receiving much training about materials or techniques at school. Rather they had relied on trial and error in assessing materials purchased in art supply shops, hardware stores, and auto-body shops. Sometimes salespeople provided technical advice as well. Mass art magazines and artists' handbooks (notably by Ralph Mayer) constituted important sources for techniques as well. Eventually, of course, all of the artists interviewed had direct contacts with paintmakers (which was how they were chosen), but mention was also made of obtaining technical advice or information about materials on occasion from art conservators and even art gallery owners. Discussions with other artists on technical matters seems to have been more common in the 1950s than later. Whether this has to do with the stages in the artists' life cycles or with changes in community practices is unclear. For more general sources of ideas about the place of materials and studio practices in art, the artists referred to experiences with other art forms (like music) and to readings in philosophy, art history and art criticism.

Theory and Artmaking Practices

Regarding the relations between conceptual notions and material practices, different patterns of attitudes emerged, ranging from almost doctrinaire insistence on the discussion of all aspects of artmaking solely in terms of theoretical precepts (as with Molinari's discourse on the incorporation of structuralist principles in his work) through an insistence on the dialectical nature of theories about art and studio practices (the majority of cases) to a grounded approach couched primarily in pragmatic terms (as in Tousignant's account).

Broad questions about the nature of art and the aesthetic rights and responsibilities of the artist were raised in connection with technical issues. Theoretical or conceptual issues ranged widely involving questions on many different levels. On a quite abstract level, talking about materials raised questions in some artists' minds about

the definition of art, such as whether art has to be objectified to be considered art. Lichtenstein and Gaucher challenged the conventional limits of "fine art materials" raising questions about whether art materials determine what is art and what isn't. Others, including Colville, Lichtenstein and Gaucher brought up the issue of whether art objects should be made of permanent material. An overriding concern in the discussion of aesthetic theories was the question of a causal relationship between technical issues on one hand and artistic vision and the creative process on the other. Artists tended either to insist that the vision came first or, like Olitski and Poons, to describe almost a dialectical relationship between material or visceral aspects of artmaking and conceptual ones.

Empirical Dimensions of Aesthetic Concerns

The empirical dimensions of aesthetic concerns emerged strongly in the artists' accounts. Studio practices were related to aesthetics not only through the objects produced but also through the aesthetics of the process itself. Visual and tactile characteristics of media connected in discourse to the aesthetic experience of artmaking, not just the finished work. (For example, cleanliness and simplicity of use were not presented merely as practical considerations, but also as aesthetic ones.)

Indeed, artmaking as process had become a major area of artistic research earlier in the century. Surrealists and dadaists had raised questions about the relation between techniques and thought (for example with staged accidents or *frottage*).²²¹ During the 1940s and 1950s various groups such as the Québec-based *automatistes* and New York action painters like Jackson Pollock were interested in what could be termed a search

²²¹ Such as when Duchamp purportedly shot lit matches from a toy cannon to determine where to put holes in *The Bride Stripped Bare by Her Bachelors, Even (Le grand verre)* de 1915-23. A typology of such techniques can be found in Barr, Alfred and Huguot, Georges. *Fantastic Art, Dada, Surrealism*, New York : MOMA, 1968.

for a union between the act of painting and the action of thinking (or feeling). This search or research was associated with technical or stylistic innovation in the representation of spontaneity and gesture as well as an emphasis on the process rather than the product of painting. All of the artists except Colville made allusions to the techniques of artists working in these expressionistic modes.

The new synthetic media tended to have characteristics which correspond to certain formal preoccupations of the 1950s and 1960s among them, flatness, the possibility of capturing gestural spontaneity and intense colors. For example, Pollock's "all over" technique used the capacity of the new automotive lacquers to run freely following his gesture, a practice mentioned by Molinari as a factor in his choice of Duco lacquers for his drawings in the mid-1950s. With regard to Duco, Tousignant brought up a point never mentioned in any of the literature encountered about artistic appropriation of automotive lacquers: the fact that auto body shops prepared them to order by custom-mixing pigments and therefore artists could either order specific colours or buy the ingredients and mix their own colours. This was a significant advantage due to the artistic emphasis on intense colour. Another alluring quality of the lacquers was that they were designed to dry flat (that is, not to hold the mark of the brush like pastier artists' oils), a feature particularly exploited by artists in some forms of abstraction. In particular, the development in formalist discourse of a preoccupation with two-dimensionality of painting was translated by Molinari, Tousignant and Gaucher (in different ways), into the search for flatness which refused any trace of illusory depth in even zones of color. The problem of the integrity of the picture-plane was confronted in different ways through efforts to reach a symbiosis between color and ground, in for example the staining techniques of Louis, Noland, Olitski and Poons using various types of synthetic media. The water-borne acrylic paints did however resist wet-in-wet mixing, making traditional modeling techniques difficult without additives and dilution, though this quality was ideal for the definition of distinct

contours.²²² The difficulty of wet-in-wet blending of different water-born acrylic colours is also associated with the development of approaches favouring the meticulous application of small zones of color (characteristic of both some op art and the realist work of Colville). The various finishes (glossy or matte as desired) developed in the 1960s offered a large range of optical effects. The water-borne acrylic mediums, milky when wet, dried transparent; this permitted, perhaps even provoked the use of intense colors. The range of colors available also included novelties, like phosphorescent and metallic paints which extended visual and tactile qualities of the paints.

It is important to note that painting media do not constitute an efficient cause as regards the "style" either in the artists' views or in the observable effects (due to the huge variation in the artworks themselves). The artists represented here had strongly divergent aesthetic goals and their work covers a variety of stylistic categories, including various forms of post-painterly abstraction (such as colour field painting, geometric abstraction, hard edge painting and op art), pop art and high realism.

Position in the Artistic Network as a Factor in Attitudes and Choices of Techniques

Connections with other artists, both historical and current, were frequently mentioned in discussions about materials and techniques, since many of the artists were aware of the possibility of being associated with other artists or art forms by virtue of their technique or choice of materials.

Although the artists emphasize their own individuality, some accounts portray a sense of community with other artists when discussing sharing information about techniques, even in cases where they didn't share aesthetic approaches of the artists they mention. Two artists talked about close collaborations with colleagues on technical and more general aesthetic matters during the period of their appropriation of synthetic

²²². Acrylic artists' colours did not bleed into each other or blend as readily as oils unless diluted.

media : Noland (who worked with Morris Louis on the use of acrylic resin paints in color field painting) and Tousignant (who worked with Molinari on the use of automotive lacquers and, later, water-borne acrylics in connections with their readings of formalist aesthetics).

The contacts between living artists sometimes took place via artworks alone, as artists describe learning from looking at paintings in galleries and museums. Frequently artists referred to the practices of figures from history (Mondrian, Rembrandt, Palladio and so forth) as sources of inspiration and information about studio methods and attitudes towards artmaking, either through artworks themselves or through published writings on or by the historical figures.

Social Symbolism and Ideological Issues

By and large, the choice of medium *per se* was depicted as relatively "value-free" as far as social and political commitments in the artists' accounts (in stark contrast to the statements by Mexican muralists of the socio-symbolic implications of technical choices). Of course in some instances, choices of materials and techniques can be interpreted as quasi-political statements, such as in Lichtenstein's flamboyant, polysemous confrontations of references to high culture, popular culture and mass media techniques.

Considering the issue of the status of the artist, Noland and Colville expressed strong feelings about the relations between materials or technique and society, framing their preoccupations in very different ways. For Noland the question of materials brought to mind his concerns about being treated as an elitist because of the favorable reception of his art by a socio-economic politically-powerful elite. For him the issue of the socio-political status of the artist as a member of the working class was established by the very fact that artists make material objects. In Colville's account the social status of the artist (as a professional) carried with it certain responsibilities, notably of

combining intellectual and artisanal skills.

On another level, Colville expressed the belief that art materials and tools are related to the social historic context more generally, explaining that his choice of modern materials was an expression of confidence in science, technological advances and the "ethos of our age". Colville, superficially the most socially-isolated artist interviewed, was the only artist to closely link his choice of modern materials in his art to an explicit socio-political stance.

Socio-Psychological Preoccupations: Artistic Vision and Material Matters

The accounts emphasized the highly subjective nature of the creative experience and the close identification of the artist with the objects they make. Certainly the appropriateness of media and techniques for rendering artistic visions, their ability to respond to creative urges and the sense of distance or immediacy that they conveyed were imbued with strong emotional connotation in portions of the testimony. But the choice of materials and techniques becomes in many instances an extension of the personal identity of the artist. Technical matters became at times for some artists deeply intertwined with issues related to the social presentation of self. As noted above, association with other artists and art forms conveyed by use of a technique was considered a factor in establishing the artist's position in the field. Thus, even those artists with a sense of emotional distance from technical matters stressed that it was important for them to feel that the techniques they adopted were appropriate for their own self-image. Thus socio-psychological issues related to the place of techniques and materials in art were linked to deep-seated feelings about subjectivity and social relations, both intimate and global.

Overall, the various themes raised by the artists in their discussions provide insights into ways technical knowledge is embedded in high culture discourse about

artistic practice and life histories, and thereby appropriated for the construction of personal and group identities.²²³

²²³. For a discussion of how individual biographies provide insights into socio-historic conditions and changes which they both transform and are transformed by see: Fournier, Marcel. L'entrée dans la modernité : Science, culture et société au Québec. Editions Saint-Martin: Montréal. 1987; Houle, Gilles. "Le bon sens des sociologues", *Sociologie du Sud-Est. Revue des Sciences Sociales*. "Connaissance de l'alterité. Méthode, méthodologies et concepts". no. 59-62, January-December 1989, pp. 47-68.

CHAPTER 9 -- Concluding Remarks: The Circulation of Art-Technical Knowledge and the Study of Artmaking as a Social Process

The circulation of technical knowledge and materials is a central facet of artmaking which is often hidden from view in representations of art and artists. We have argued that this situation may be largely accidental, a consequence of the acceptance of conventional wisdoms embedded in discourse reflecting historical struggles by artists to abandon their status as artisans and attain recognition as members of a cultural elite. Indeed, more generally, insistence on the transcendental nature of art and the singularity of artists has tended to obscure the social character of art worlds. After all even the study of mediation and reception as crucial processes for understanding art is relatively recent. Our research has revealed other support structures for artists and artmaking in the context of painting in mid-20th century North America-- organizational frameworks and informal networks of paintmakers, conservators, chemists and other technical experts.

The Place of Artists in Informal Networks and Organizational Frameworks for Art-Technical Work

Prominent artists hold a special place in these structures, but here Sunday painters and unrecognized artists have a voice as well. Artists are both an audience for art-technical work and participants in the process of validation of art-technical work as a contribution to culture. By creating works of art, painters launch the process of reception of the fruits of the paintmakers' labours and produce objects for the conservator's attentions. Through the agency of the artist, the techniques and processes disseminated by art-technical writers enter the domain of artistic practice.

The relations between artists and the different networks involved with the development and diffusion of materials and techniques has varied over the period of time covered by our investigation. Contacts between conservators and artists altered significantly when art by living artists increased in market value and began to be

collected and restored. The process of professionalization of the activities of conservator-restorers and the emergence of conservation scientists has served to enhance their authority in art-technical disputes related to the treatment of works and the establishment of standards for art materials.

As for contacts between small entrepreneurial paintmakers and artists, patterns of collaboration recur over time and can be observed in other contexts, hearkening back to stories of artists and their "colourmen" in European traditions. Accounts of close associations between prominent innovative artists and pioneers in new art materials are key elements in company histories, although a close examination reveals much interaction between painters and lesser-known artists as well. Many innovative paintmakers appear have had complex motivations for founding their companies involving a special personal commitment to art which made them responsive to trends in aesthetic and pragmatic preoccupations of painters. Furthermore, the history of relations between paintmakers and artists in North America, although founded on commercial exchange, is relatively unmarked by conflict in part because of early involvement of paintmakers in efforts to improve art materials by developing manufacturing standards. Changes observed over time in relations between specific paintmakers and artists seem attributable primarily to growth and transfer of ownership in companies. Smaller enterprises with more intimate connections to the arts appear better able to adapt to changing orientations and are the site of most innovations in artists' paints.

Another main category of participants in art-technical matters are the writers of technical advice columns and artists' handbooks who disseminate information and promote normative practices. Widely-distributed art magazines and handbooks appear to be especially important for artists working outside major centers for artistic activity, as would be expected. The proliferation of these various technical writings after World War II not only attests to an increased interest in artmaking processes by a growing

public of amateurs and aspiring artists but also shows a new emphasis on technical innovation in critical discourse about avant-garde American art at mid-century.

Materials and the Meaning of Things

In order to observe these various relationships we have focussed on a particular case -- the development, diffusion and appropriation of a group of new art materials in twentieth century North America. To what extent can this case yield more general insights into social processes related to cultural production? Of course, on a superficial level the widespread adoption of synthetic painting media made early innovators with them into models for later trends. Yet more generally our observations also show that techniques and materials have cultural meanings which serve both to create boundaries between participants in art worlds and to enhance communication amongst them.

Accounts by artists, paintmakers and conservators indicate that techniques and materials used in artmaking have multiple socially-generated meanings which change over time. In particular, at given times and places, in given social contexts, materials and techniques carry meanings which play a part in the production and reception of artworks and artists. For example, according to representations by Mexican muralists, the adoption of Native American materials (like nopal cactus juice) or modern ones (like automotive lacquers) showed solidarity with peasants, with workers and the dispossessed. As we have seen in the case of Aboriginal acrylic *Dreamings*, art materials sometimes act as powerful signals even to the point of influencing decisions over whether something is or is not art in high culture circles. Yet there is no single prevailing interpretation of the symbolism of synthetic paints.

Indeed, the polysemous nature of all materials used to make art or other things has perplexed observers trying to model connections between culture and technology. The simple postulate of a parallelism or dependent relationship between society (and its art) and technology has been largely discredited in favour of more complex

formulations.¹ In an effort to emphasize that, despite their multiple meanings, materials do matter in the constitution of cultural representations, historian Robert Friedel drew up a list of principles about the relationship of things to the stuff of which they are made. There is humor in the bare-boned list because the simplicity of the statements masks the complexity of their implications for theories of material culture. Friedel's set of principles is as follows:

- Everything is made of something;
- There are reasons for using particular materials in a thing (such as function, availability, economy, style, tradition);
- These reasons are subject to change as circumstances change (to take into account factors like geography and technology);
- Different values are attached to different stuffs (depending on scarcity, aesthetics, functional considerations and associations);
- These values are not inherent in the material but are determined by circumstances;
- The values attached to materials affect the values attached to things but they are not the same."²

Our study has offered a specific illustration of how materials and techniques do matter for the social life of things.³ Even more importantly, by focussing on art materials and art-technical practices, this research has revealed new dimensions for understanding how artwork and other objects come to be endowed with cultural meanings.

Synthetic Media and Modern Painting The Protean Nature of Synthetic Media and the Potential for Infinite Innovation

The specific case has a special interest too. The social symbolism of synthetic

¹. The transition from a thesis of social determinism by technology to one of mutual interdependence in the analysis of Lewis Mumford was radical for its time (1934) but like Francastel's later reflections on the revolutionary social function of technique in modern art displays a confidence in the notion of progress which is untenable in more recent styles of observation. Mumford 1963 (1934); Francastel, Pierre. *Art et Technique aux XIX^e et XX^e Siècles*. Paris: Gallimard, 1956.

². Reflecting on early discussions about the first principle, Friedel recalled: "No one could put a hole in this statement . . . I detected, however, the lingering (if unspoken) thought that no one knew what it meant". Friedel, Robert. "Some Matters of Substance". Lubar, Steven and Kingery, W. David, *History from Things. Essays on Material Culture*, Washington: Smithsonian Institution, 1993, pp. 41-50.

³. Appandurai, Arjun. *The Social Life of Things: Commodities in Cultural Perspective*. Cambridge: Cambridge University Press, 1986.

media is inextricably bound up with the historical conditions of its appropriation for use in modern art. In the words of Pierre Francastel:

"Technique does not create the values of a society, it serves them and makes them material."⁴

As we have discussed technical innovation assumed great importance for the recognition of the modern artist in the 20th century. Not incidentally in our view, representations of synthetic painting media depict them as having a protean ability to assume different properties and fill different needs, offering in theory at least limitless possibilities for innovation. Indeed discourse about the new media in the arts parallels to some extent discourse about the relationship between plastics and U.S. culture. In the words of historian Jeffrey Meikle :

"As far back as 1927, publicists for the industry proclaimed a "Plastic Age" equal in historical significance to earlier ages of bronze, iron, gunpowder, or steel. . .

Plastics themselves, by their very nature, complicate the problem of determining their cultural significance. Able to assume virtually any shape, texture, hardness density, degree of resilience, or color, the myriad varieties are united only by a word, "plastic," . . . Is it a material truly capable of shaping the course of history, or is it merely an amorphous substance, receptive to virtually any psychological or cultural projection?"⁵

Tentatively at first semi-synthetic plastics were introduced as imitations of so-called natural products, as cheaper, more available substitutes for luxury materials.⁶ They were a miraculous new discovery at a time when limits of natural resources were beginning to be sensed. By the beginning of the twentieth century new categories of totally synthetic plastics began to be produced. Early promoters presented them as

⁴. "La technique ne crée pas les valeurs d'une société, elle les sert et les matérialise." Francastel, 1956, p. 267.

⁵. Meikle, Jeffrey. "Materials and Metaphors: Plastics in American Culture", in Sinclair, Bruce. *New Perspectives on Technology and Culture*, Philadelphia: American Philosophical Society, 1986, pp. 31-48, especially p. 32.

⁶. On the cultural history of plastics see Sparke, Penny (editor) *The Plastics Age. From Bakelite to Beanbags and Beyond*. Woodstock, New York: Overlook Press, 1992 especially : Barthes, Roland. "Plastic" in Sparke 1992, p. 110-11; Baudrillard, Jean. "Natural Wood, Cultural Wood", in Sparke 1992, pp. 112-113; Friedel, Robert Douglas. *Men, Materials and Ideas: A History of Celluloid*. Ph. Dissertation. Johns Hopkins University, 1977.

utopian materials even before they were widely available: they were "cheap, inexhaustible, versatile, durable, and somehow exotic" promising "to usher in an age of material abundance and democratic luxury".⁷ The properties of different synthetic media began to be exalted for themselves as representations of hope and confidence in the power of human endeavor (manifested through technology) which functioned as an antidote to the chaos of the depression-marked 1930s and war years.

In art this coincides with the early discovery of synthetic lacquers by Siqueiros and his enthusiastic promotion of modern synthetic painting materials for their potential to liberate artistic practice from the servitude of complicity with old orders. The search for new painting materials in the context of public art projects in Mexico and the U.S. is another manifestation of the eagerness to put science in the service of art for the expression of modernist social goals.

Until the end of World War II the public had only limited experience of plastics but after the war the growing availability of the new mass-market consumer products made with plastics erased associations with luxury and quality. To gain acceptance with a growing body of middle-class consumers, designers began once again to have plastics masquerade as other materials, for example "vinyl floor tiles and upholstery masqueraded as marble and leather" in easy-care products.⁸ Some applications were hasty and plastics came to be depicted as inauthentic, cheap, low quality and in poor taste.⁹ Early efforts to develop synthetic media for proprietary artists' paints at mid-century also focussed on the imitation of traditional handling properties of artists' oil paints, casein or tempera. Soon, paintmakers abandoned the use of the term "plastic" to describe them, adopting other words with less perjorative symbolic pedigrees (such as "synthetic polymers"). Yet the drive for innovation in the arts prevailed and by the

⁷. Meikle 1986, p. 35.

⁸. Meikle 1986, p. 38.

⁹. Sparke, Penny. "On the Meanings of Plastics in the Twentieth Century" in Sparke 1992, pp. 6-12.

late 1950s the multiplicity of visual and tactile effects possible with synthetic artists media was evident in the work of avant-garde artists which deliberately emphasized the characteristics of the new paints.

In the late 1960s and 1970s hostile criticism of plastics in society once again erupted, this time focussing on environmental implications. However within the ecology of the health-conscious artist's studio the water-borne acrylics were felt to offer relatively safe alternatives to many older materials. Artists, paintmakers, conservators and chemists developed standards to improve the durability and safety of the new paints.

Overall, a strong faith in the value of technical expertise in North American culture was a component in much discourse about the emergence of synthetic materials in art, but the malleability of the materials and their conduciveness to multiple interpretations was an important factor in their adoption. The properties of the materials themselves fit with the interest in technical change in art and in the larger social context as well. The new materials provided a way to circumvent the limitations of older media for the aesthetic and tactile goals of artists in their quest for innovative solutions in their painting. Synthetic paints were cheap and associated with modernity at a time when confidence in social benefits of applied science was soaring.

The changes in American painting materials during the 20th century evinced by the rapid adoption of synthetic painting media by artists at mid-century could easily be described as an incremental evolutionary process, a case of parallelism in developments in technology and culture. After all, the basic elements -- industrial chemical products suitable for use as coatings -- had been available in some forms for decades in general society and had sometimes been used in art. Yet in a decade or so synthetic media became immensely popular with painters for creating art which was widely heralded as profoundly innovative. Unquestionably there was a paradigm shift in paintmaking

technology, and in artmaking techniques as well.¹⁰ Painters recalled the importance of access to new materials and information about it at critical moments in the history of their artistic evolution and careers. Ability to produce the new media became an important skill for paintmakers and knowledge of how to preserve art made with synthetic materials (and improve the materials themselves) emerged as a preoccupation for conservators of modern art.

The Power of Aesthetic Considerations in Technical Practices

The relations between art and society often appear overwhelmingly skewed in favour of extra-aesthetic considerations. There is a sense that the powerful forces embodied in modern enterprises and new technologies subvert or contaminate aesthetic practices and creations. Yet, the insistence on oppositions between instrumental activities embodied in technology and the arts has tended to obscure the authority that artistic values have at times exercised in relations between these different areas of cultural practice.

The development of a group of new art materials in twentieth-century North America provides a new perspective for observing the interface between art, technology and society. These new materials -- synthetic painting media (such as acrylics)-- use commercial products of the industrial age originating primarily in chemical research laboratories of large corporations. Yet the emergence of these paints in art does not appear to have been an externally-generated imposition of technology on the artistic

¹⁰. Although anthropologists and archeologists have often depicted changes occurring in technology and culture over time as an evolutionary process, analogous to Darwinian natural selection, technological discontinuities may be seen as revolutionary changes caused by confrontations in world views. Here conflicts force choices and a model achievement produces a paradigm which is shared for a time by a community of believers. Kuhn, Thomas S. *The Structure of Scientific Revolutions*. Chicago: U. of Chicago Press, 1962; and Kingery, W. David "Technological Systems and Some Implications with Regard to Continuity and Change," in Lubar, Steven and Kingery, W. David, *History from Things. Essays on Material Culture*, Washington: Smithsonian Institution, 1993, pp. 215-230.

field by commercial forces; on the contrary, accounts by paintmakers and artists portray the introduction of the new paints as an act of appropriation on their part which was not always welcomed by corporate representatives although collaborations did occur. The development and diffusion of synthetic paints for artists was made possible by communications among several 'fields', and reveals a collective process which cuts across disciplinary boundaries. Participants from the chemical industry, university research centers, museums and government agencies (in the United States, Mexico and Canada) played significant roles in the development, spread and eventual regulation of these new materials. Nonetheless, synthetic painting media specifically produced for artists appear to have emerged primarily due to the collaborative efforts participants in art worlds. Artists and small entrepreneurial paintmakers used new chemical products to create materials which satisfied aesthetic, political and economic preoccupations of artists, critics and patrons. The paints are deeply bound up in the dominant representations of artistic identity and practice in North America, beginning at least in the 1930s. Although the discourse about these new materials represents them as having multiple meanings (within several different aesthetic frameworks), it firmly situates synthetic paints within artistic priorities for the groups concerned.

The case of synthetic painting media in 20th-century North American painting provides an example of the power and potential of artistic interests both to subvert (as in the case of Siqueiros' appropriation of commercial paints against the will of the manufacturer) and to inspire (as seen, for example, in the collaborative work of entrepreneurial paintmakers like Gutiérrez, Bocour and Golden with artists). Above all, stories by paintmakers and artists highlight the complex interplay of theories of art, other ideologies, economics and more general historical processes in the marriage of technology and the arts which the new synthetic paints came to represent. In particular we see how different sorts of knowledge combined to favour the appropriation of technical skills for the constitution of personal and group identities in

the collective enterprise of cultural production-- cultural production of both a material and a symbolic nature.

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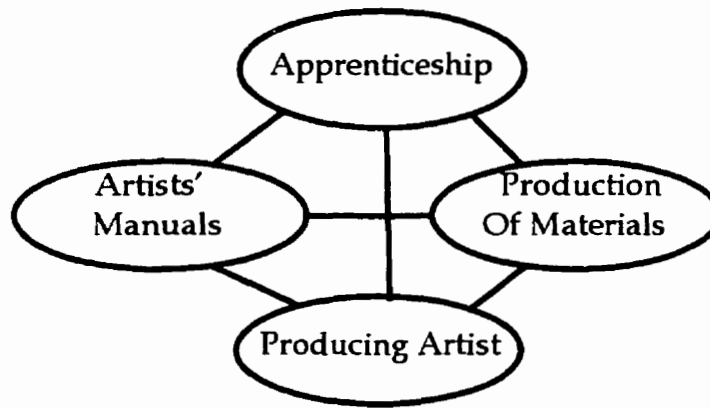
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Appendix A

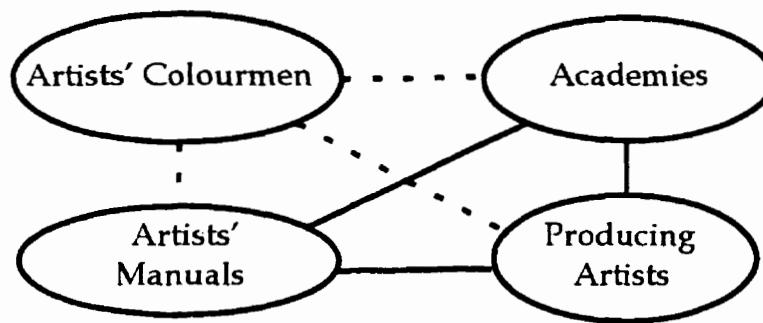
Figures

Figure 1a: Keyser's Schema for the Diffusion of Art-Technical Knowledge

INTERDISCIPLINARY RELATIONSHIPS



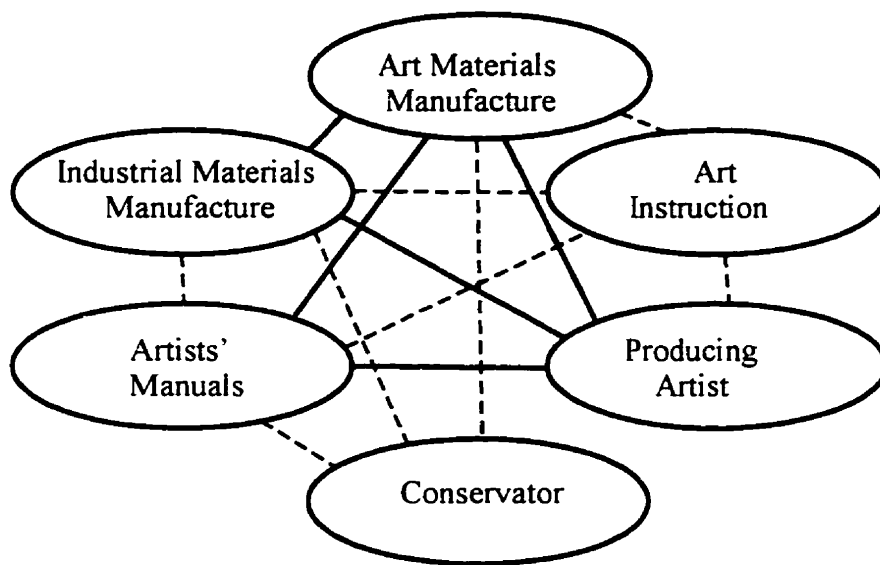
MEDIEVAL PERIOD
Painting as Craft



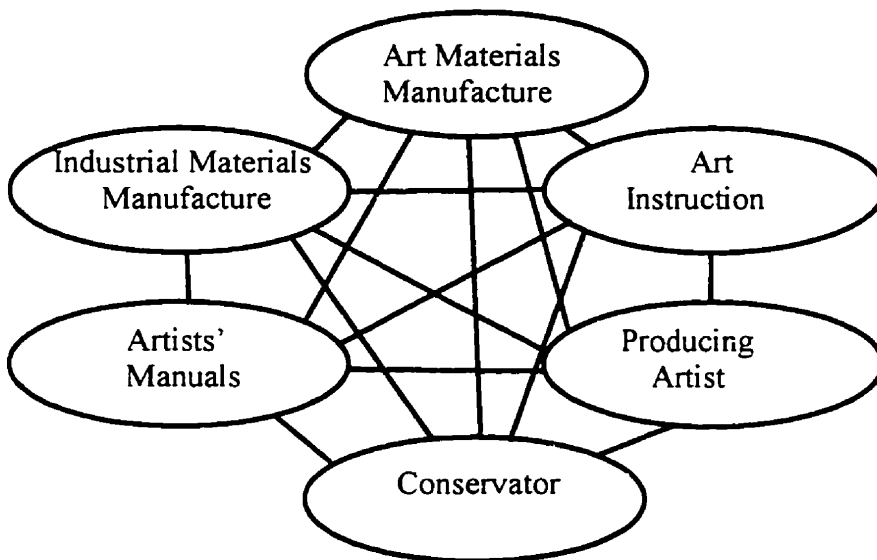
NINETEENTH CENTURY

Figure 1a -- *Keyser's Schema for the Diffusion of Art-Technical Knowledge*. From Keyser, Barbara (Queen's University, Kingston). *Encyclopedias of Ignorance: A Critical Look at Twentieth-Century Artists' Manuals*, unpublished manuscript of paper given at the International Symposium on the Conservation of Contemporary Art. Ottawa: National Gallery of Canada, 7-12 July 1980.

Figure 1b: Keyser's Schema for the Diffusion of Art-Technical Knowledge



Twentieth Century - As It Is



Twentieth Century - As It Could Be

Figure 1b -- *Keyser's Schema for the Diffusion of Art-Technical Knowledge*. From Keyser, Barbara (Queen's University, Kingston). *Encyclopedias of Ignorance: A Critical Look at Twentieth-Century Artists' Manuals*, unpublished manuscript of paper given at the International Symposium on the Conservation of Contemporary Art. Ottawa: National Gallery of Canada, 7-12 July 1980.



Figure 2 -- *Paintmakers and the New York Art Scene.: Life Drawing Class with Len Bocour (seated in centre-left in conversation with woman) and Sam Golden (extreme left) in their Paintmaking Studio in New York City. c.1940-1945. Courtesy Ruth Bocour, New York City.*



Figure 3 -- *Institutions and the Development of Standards During the New Deal. Photo of Rutherford J. Gettens (left), Frank Sterner (centre) and an Unidentified Third Person Presenting a Report of the Federal Art Project in Boston, 1938 . Courtesy Freer Conservation Department (Gettens Collection), Freer Gallery of Art, Smithsonian Institution, Washington, D.C.*

LET'S TALK
new **MAGNA**

the first new painting medium in 500 years

The Old Masters never had it so good! Since oil painting was re-discovered in the 15th century, tremendous progress has been made in the field of pigmentation, but research yielded very little of value to improve on linseed oil as a binding vehicle... until Bocour Paints' revolutionary development and perfection of MAGNA, for the first time, has...

DISCOVER THE MIRACLE OF MAGNA FOR YOURSELF!

MAMMOTH MAGNA SAVINGS! 6 BASIC COLORS!
FULL STUDIO SIZE TUBES!
VALUABLE EXTRAS! ALL INCLUDED!

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SPECIAL OFFER:
SAVE \$2.25!

YOU PAY ONLY \$5.50

Figure 4 -- *Advertising the New Paints. Let's Talk New Magna. The First New Painting Medium in 500 Years.* c. 1954. Leonard Bocour, advertisement for Magna Paints (spirit-soluble acrylics). Courtesy Ruth Bocour, New York City.



Figure 5 -- *Conservation Science and Research on Synthetic Media. Robert Feller with Distilling Column for Methacrylates, National Gallery of Art Project, Mellon Institute, Pittsburgh, c.1955. Courtesy Freer Conservation Department (Gettens Collection), Freer Gallery of Art, Smithsonian Institution, Washington, D.C.*

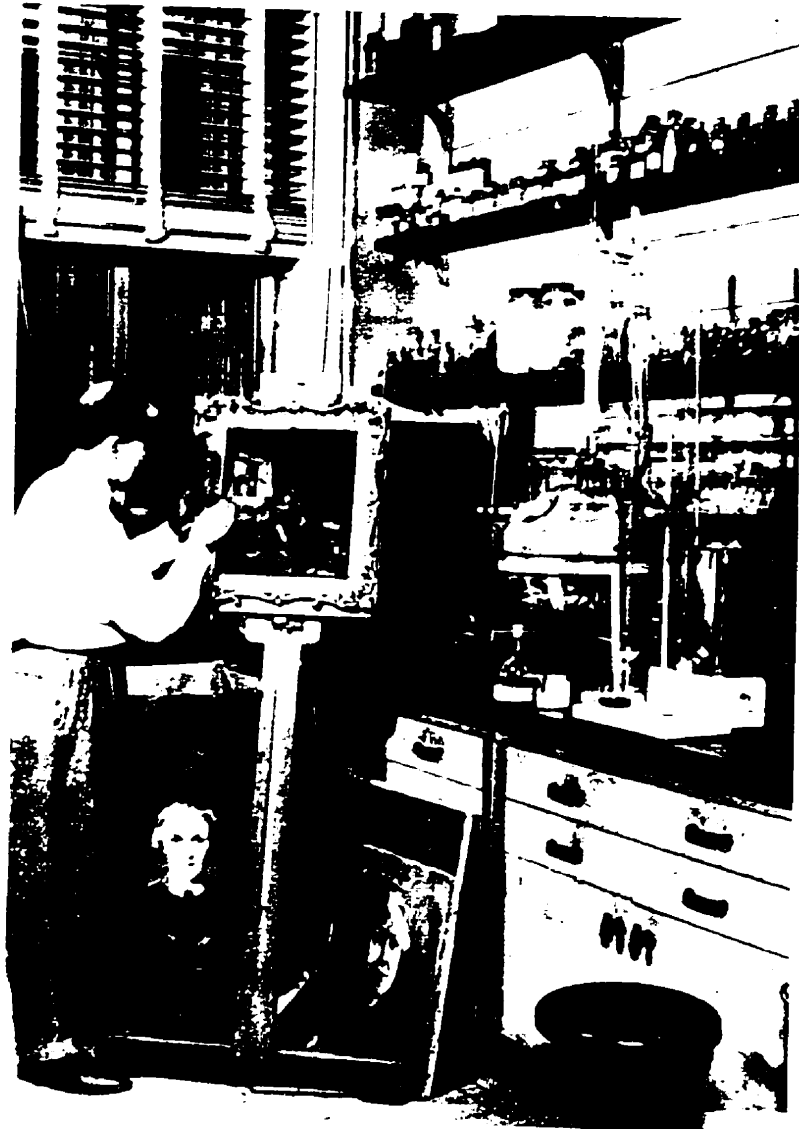


Figure 6 -- *Conservation Science and Research on Synthetic Media. Robert Feller, National Gallery of Art Fellow, in his Laboratory at the Mellon Institute, Pittsburgh, c. 1955. Courtesy Freer Conservation Department (Gettens Collection), Freer Gallery of Art, Smithsonian Institution, Washington, D.C.*



Figure 7 -- *Science in the Service of Art. Conservator Louis Pommerantz Examining a Painting with a Zeiss "Opticon" Microscope at the Art Institute of Chicago, 1958. Courtesy Freer Conservation Department (Gettens Collection), Freer Gallery of Art, Smithsonian Institution, Washington, D.C.*



Figure 8 -- *The Practice of Paintmaking (Starting a New Business)*. Sam Golden (second from right), Family (Mark, far left, Barbara far right and wife Adele at his side) and Associates (l-r Brett Snow, Chuck Kelly) Mixing Paint. in their New Company in the Barn in UpState New York. c.1980. Courtesy Golden Artists' Colors, New Berlin, N.Y.

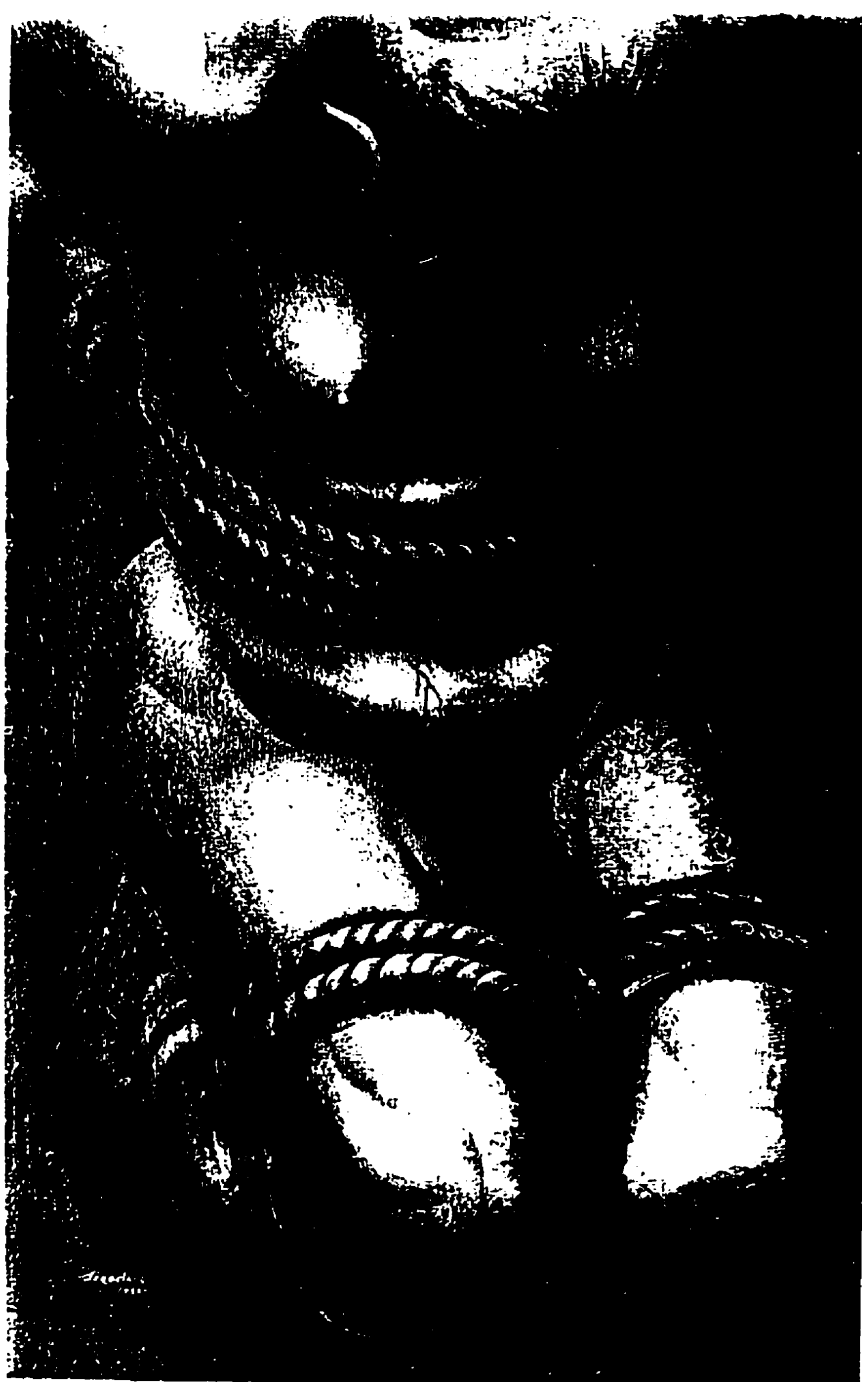


Figure 9 -- Siqueiros, David Alfaro. *Proletarian Victim*. 1933, Enamel (Duco) on burlap, 81" x 47 1/2". The Museum of Modern Art, New York. Gift of the Estate of George Gershwin. Photograph © 1996 The Museum of Modern Art, New York. Reproduced by Permission of the Museum of Modern Art, New York.



Figure 10 -- Pollock, Jackson. *Composition with Pouring In II*. 1943. Formerly thought to be Duco on canvas (recent investigations by conservator Susan Lake indicate that it is probably oil on canvas), 25 1/8 x 22 1/8" (55.7 x 55.6 cm), Hirshhorn Museum and Sculpture Garden, Smithsonian Institution, Gift of the Joseph H. Hirshhorn Foundation, 1966. Photograph by Lee Stalsworth.



Figure 11 -- Louis, Morris. *Point of Tranquility*, 1959-1960. Magma (spirit-soluble synthetic resin) on canvas. 258.2 x 344.9 cm. Hirshhorn Museum and Sculpture Garden, Smithsonian Institution, Gift of Joseph H. Hirshhorn, 1966. Photograph by Lee Stalsworth. Reproduced with Permission of the Hirshhorn Museum and Sculpture Garden, Smithsonian Institution, Washington, D.C.



Figure 12 -- Noland, Kenneth. *Beginning*, 1958. Magna on canvas. 228.5 x 243.5 cm. Hirshhorn Museum and Sculpture Garden, Smithsonian Institution, Gift of Joseph H. Hirshhorn, 1966. Photograph by Lee Stalsworth. Reproduced with Permission of the Hirshhorn Museum and Sculpture Garden, Smithsonian Institution, Washington, D.C.

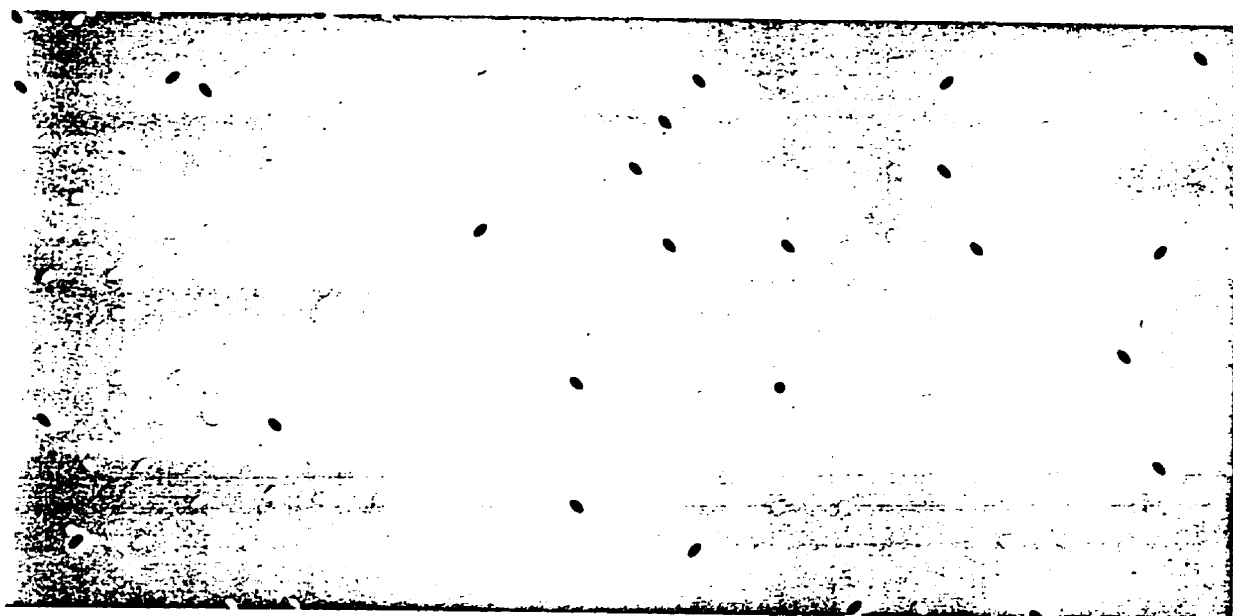


Figure 13 -- Poons, Larry. *Sicilian Chance*. 1964. Acrylic on canvas. 6' x 12'.
Hirshhorn Museum and Sculpture Garden, Smithsonian Institution, Gift of
Joseph H. Hirshhorn, 1966. Photograph by Lee Stalsworth. Reproduced with
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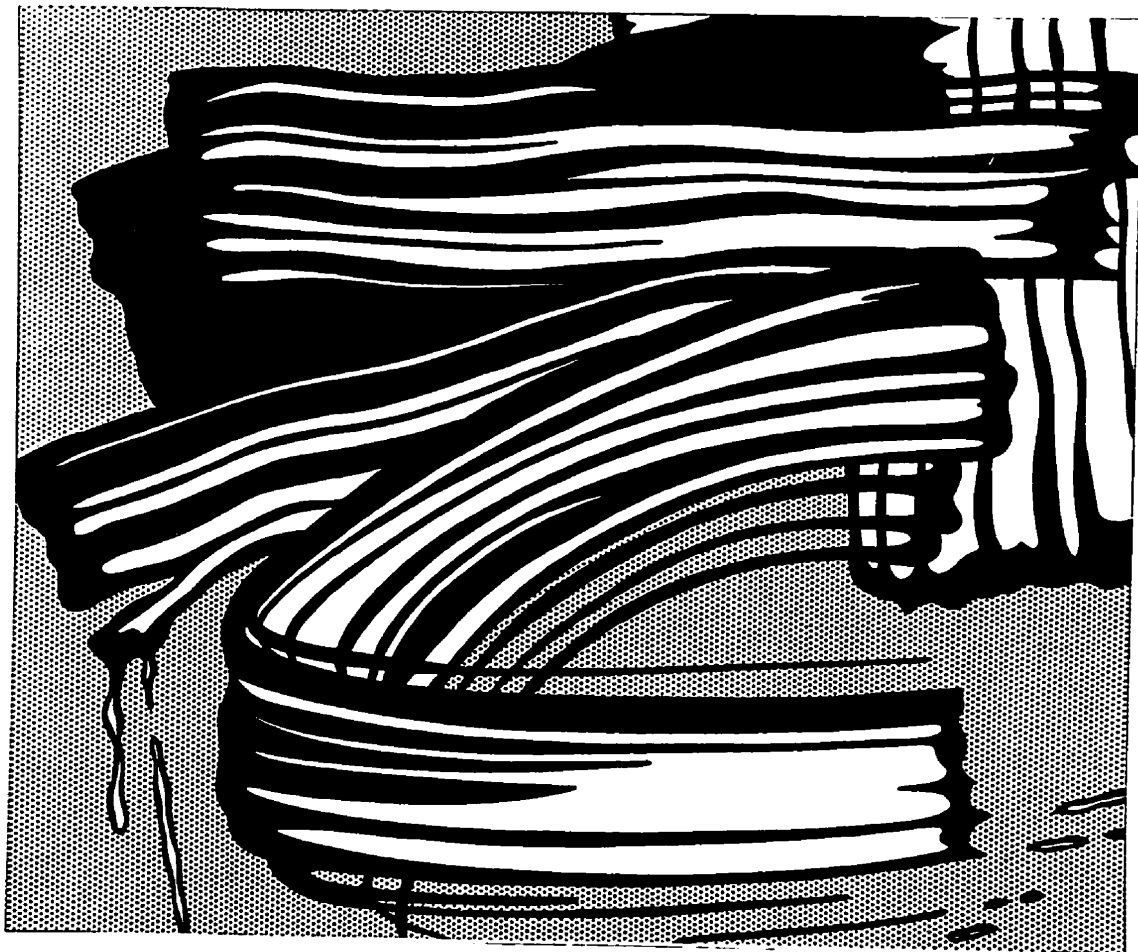


Figure 14 -- Lichtenstein, Roy. *Little Big Painting*, 1965. Oil and Magna on Canvas. 172.7 x 203.2 cm. Whitney Museum of American Art, New York. Purchase with funds from the Friends of the Whitney Museum of American Art. Photograph copyright (c) 1996: Whitney Museum of American Art, New York. Reproduced with permission of the Whitney Museum of American Art.

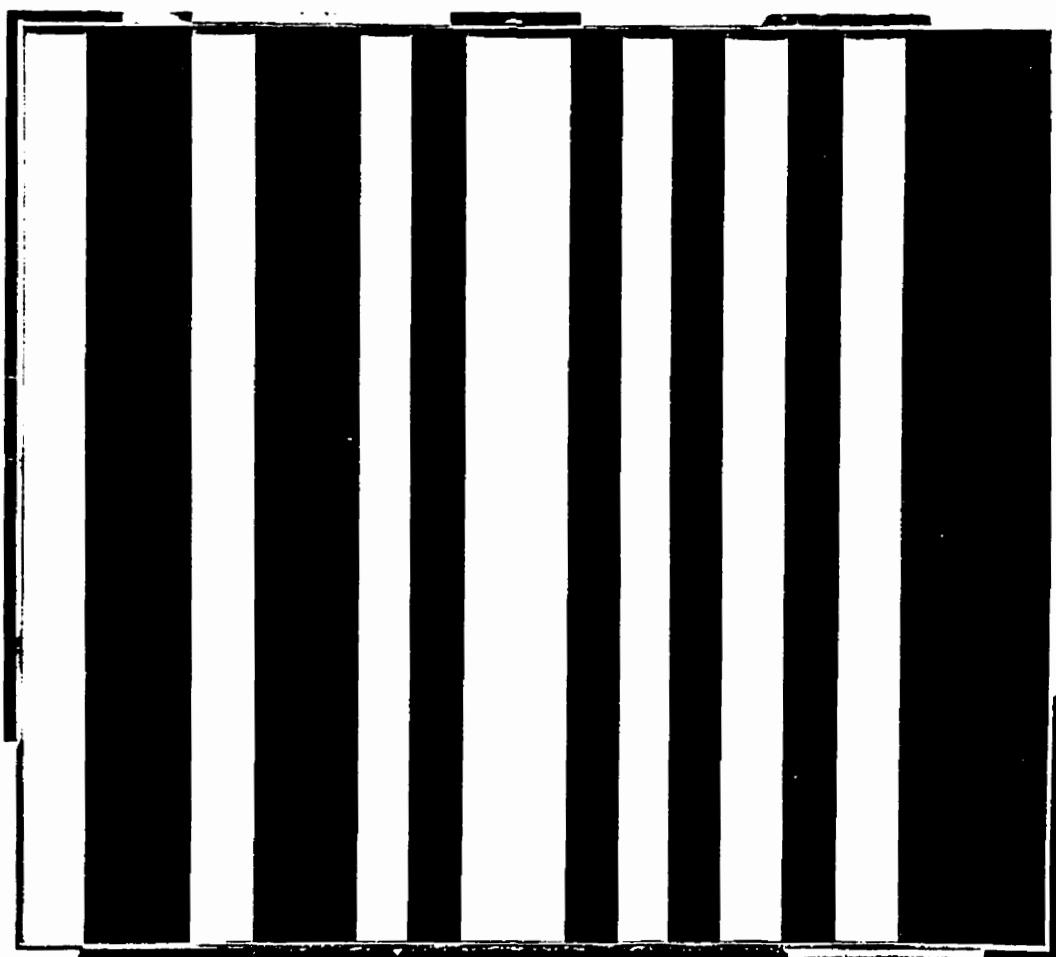


Figure 15 -- Molinari, Guido. *Multinoir*, 1962. Acrylic on Canvas. 113.8 x 124.8 cm.
Art Gallery of Ontario, Toronto. Gift from the McLean Foundation, 1967.
Reproduced with Permission of the Art Gallery of Ontario.

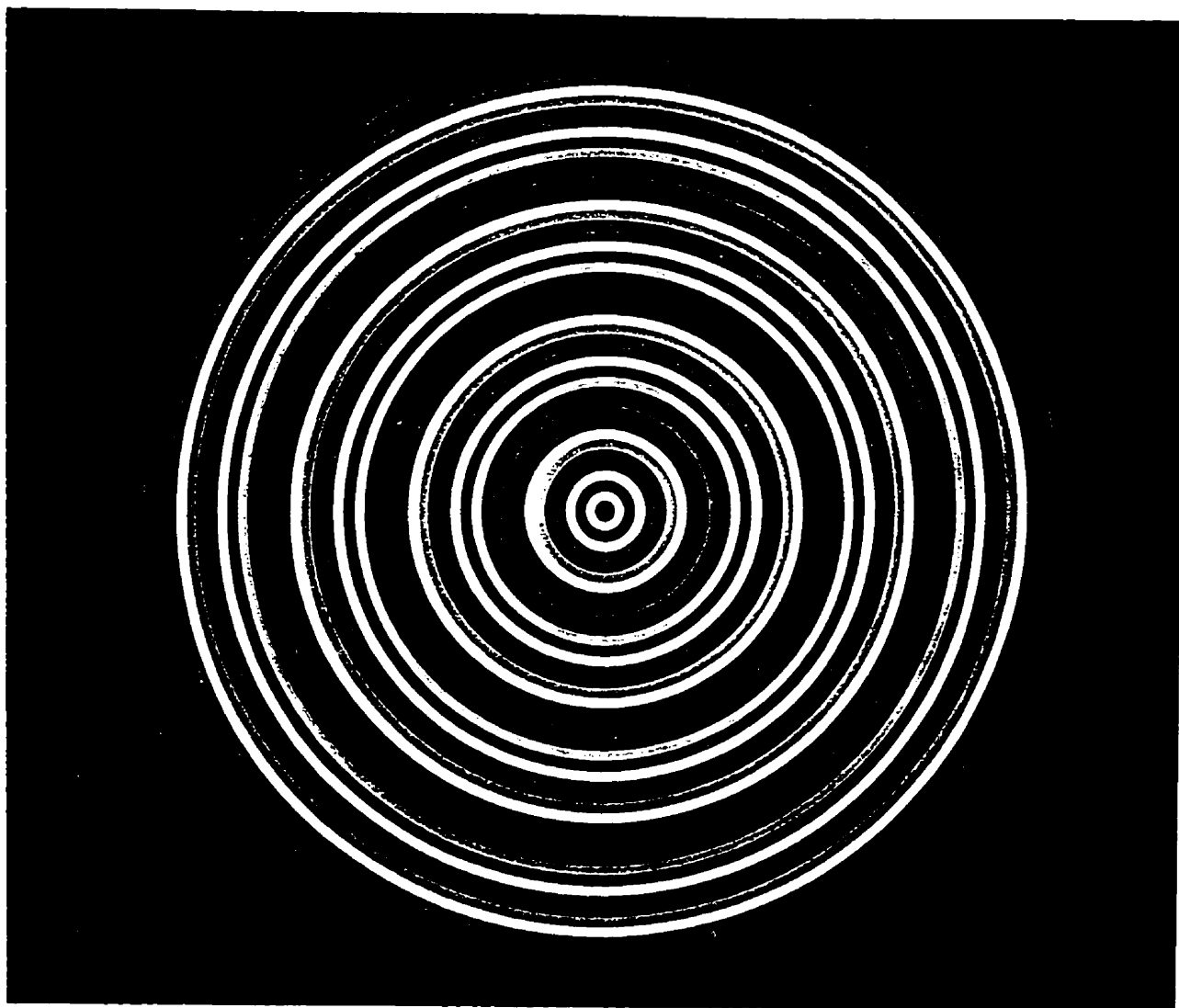


Figure 16 -- Tousignant, Claude. *Gong 88*, 1967. Liquitex on Canvas. 223.5 cm in diameter. Art Gallery of Ontario, Toronto. Gift from the McLean Foundation, 1967. Reproduced with Permission of the Art Gallery of Ontario and the artist.

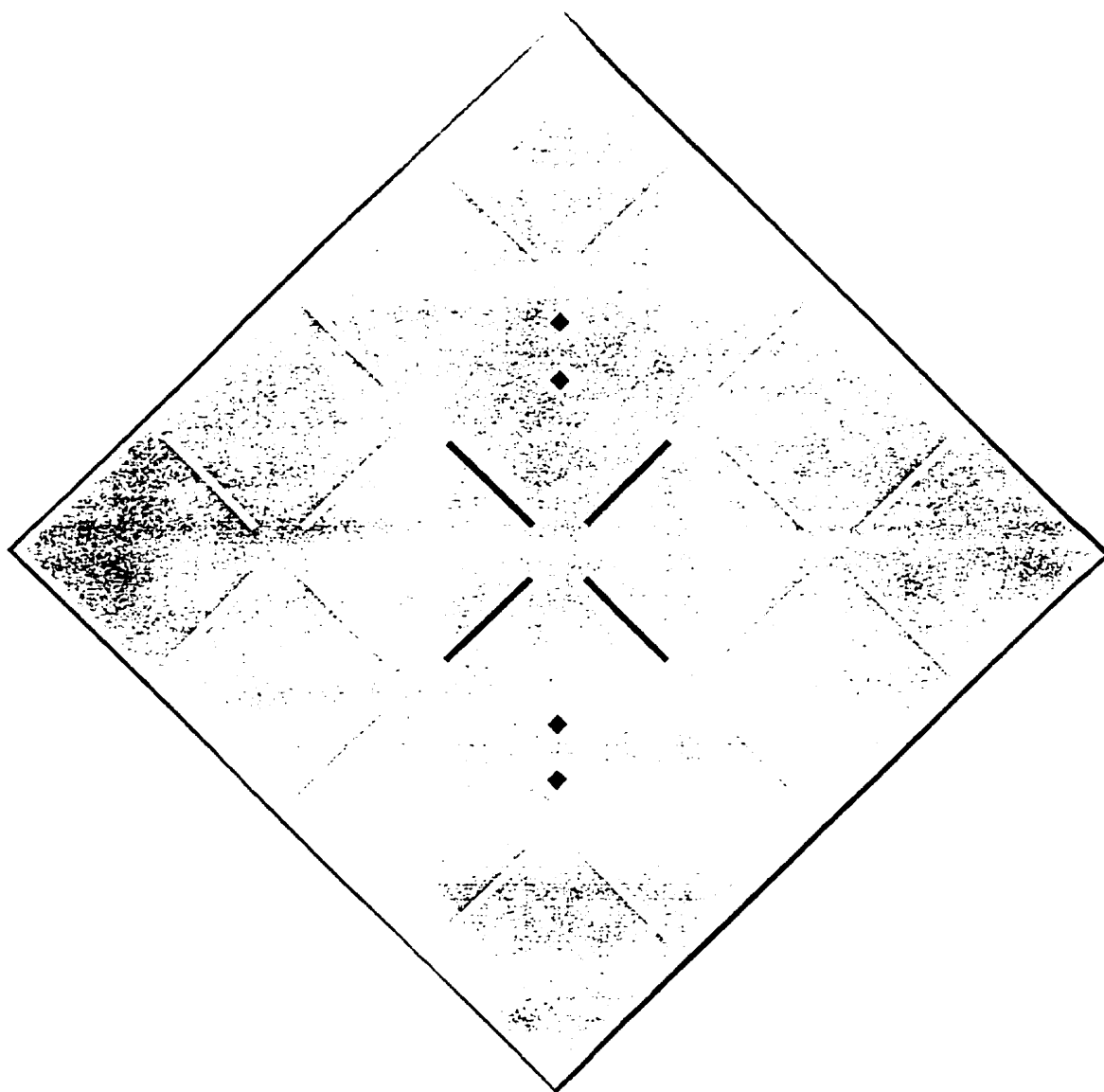


Figure 17 -- Gaucher, Yves. *Le Cercle de Grande Réserve*, 1965. Acrylic on Canvas. 215.9 cm diagonally (152.4 x 152.4 cm). Art Gallery of Ontario, Toronto. Gift from the McLean Foundation, 1966. Reproduced with Permission of the Art Gallery of Ontario and the artist.



Figure 18: Colville, Alexander David. *Skater*. 1964, Synthetic polymer on panel, 44 ½" x 27 ½" (113 x 69.8 cm). Synthetic polymer paint on composition board. The Museum of Modern Art, New York. Gift of R. H. Donnelly Erdman (by exchange). Photograph © 1996 The Museum of Modern Art, New York. Reproduced with Permission of the Museum of Modern Art, New York.

Appendix B

Tables

Table 1: Selected Early Organizations for the Conservation of Historic and Artistic Works Involved with the Diffusion of Research on Modern Painting Media

Acronym	Name	Participants	History and Activities
Art Technical Section - AAM	Art Technical Section of the American Association of Museums	-mostly conservators (including private restorers) conservation scientists, some other museum professionals (U.S., Canada, Mexico)	-begun in 1935, ceased c. 1967 -papers on technical issues, sometimes published in <i>Museum News</i>
IIC, IIC-AG and IIC-CG	International Institute for the Conservation of Historic and Artistic Works -- American Group and Canadian Group	-art conservators, conservation scientists and interested museum professionals world-wide	-begun c. 1950 (in England) to promote standards in art conservation and diffuse information in scholarly journals (<i>Art and Archaeology Technical Abstracts</i> , and <i>Studies in Conservation</i>). -Also publishes preprints of talks. -Regional groups begun later (AG in 1958 originally included Canadians) to meet more often and focus on special interests
AIC	American Institute for the Conservation of Historic and Artistic Works	-art conservators, conservation scientists and interested museum professionals (North America)	-begun c. 1970, similar goals to IIC-AG plus certification of members. Publishes <i>Journal of American Institute for Conservation</i> and preprint of conference papers
ICC-ICOM	International Committee for Conservation of the International Council for Museums	-as in IIC but more policy-oriented with focus on cultural and museological issues in institutional, political and economic context	-begun in 1967, based in Rome -26 working groups produce triennial papers

Table 2: Some Key American Organizations Involved with Development of Standards Related to Artists' Synthetic Paints (Excluding Artists' Organizations)

Acronym	Name	Participants	History and Activities
Standing Committee CS98-42/62 (now defunct)	Standing Committees of the Recommended Commercial Standard for Artists' Oil Paint	<ul style="list-style-type: none"> - 1st committee (for 1942 CS): 22 total: 10 representatives of artists' organizations and 10 manufacturers plus conservator (chair), National Bureau of Standards rep. - 2nd committee (for 1962 CS): 18 members (including chair), 10 from art trade, 2 Artists' Equity reps and six researchers or conservators 	<ul style="list-style-type: none"> - begun by New Deal arts administrator Frank Sterner and conservator Rutherford J. Gettens with U.S. National Bureau of Standards c. 1939 - developed a voluntary standard (not enforced) for oils but could not agree on expanding coverage or improving testing
ASTM-D01.57	Sub-Committee on Artists' Paints and Related Materials (D01.57) American Society for Testing and Materials	<ul style="list-style-type: none"> - ASTM about 35,000 members, mostly engineers, scientists, some academics and consumers, reps of firms, government agencies, laboratories - in Sub-Committee: artists, paint-makers, conservators, handbook authors, academics 	<ul style="list-style-type: none"> - ASTM founded in 1898 - Sub-Committee begun c. 1978 with work by consumer advocate Joy Turner Luke, paintmaker Henry Levison and others - establishes standards for testing and materials regarding labelling, composition, properties
NAMTA	National Art Materials Trade Association	<ul style="list-style-type: none"> - about 1800 members : art materials manufacturers, wholesalers and retailers (including small shop owners), others may join 	<ul style="list-style-type: none"> - founded in 1950 - forum for competition and diffusion of information on products - has trade shows, training sessions for salespeople, Hall of Fame - represents interests of art materials trade elsewhere
ACMI	Art and Craft Materials Institute (now Art and Creative Materials Institute)	<ul style="list-style-type: none"> - about 175 manufacturers of school and professional art products 	<ul style="list-style-type: none"> - founded in 1934 - certification program re: nontoxicity and hazard labelling
ISCC	Inter-Society Color Council	<ul style="list-style-type: none"> - about 900 members - formerly representatives of wide range of national organizations concerned with colour and testing (industry, health, artists, etc.) - now private members allowed 	<ul style="list-style-type: none"> - research and diffusion of information about colour physiology, testing methods, and socio-cultural trends - test methods developed by members influential in standards for paint
FSCM	Federation of Societies for Coatings Technology (formerly Federation of Paint and Varnish Clubs)	<ul style="list-style-type: none"> - about 7,300 chemists, engineers, coatings manufacturers (commercial and industrial mostly) 	<ul style="list-style-type: none"> - founded 1922 - publishes practical and technical papers - influential in ASTM

Table 3: Summary of Key Entrepreneurs and Companies Making Synthetic Paints for Artists in the U.S., Canada and Mexico with Brand Names and Dates of Introduction (c. 1940s-1994)

Company Name and Location	Key Brand Names of Earliest Synthetic Paints	Key Figures in Development of New Media	Date Product Introduced
American Artist Color Works (Brooklyn, N.Y.)	Vanguard	Herb Aach	after 1965 (?)
Bocour Artist Colors, Inc. (New York City then Garnersville, N.Y.)	Magna , Aqua-Tec	Len Bocour Sam Golden	-Magna c. 1947, ads c. 1953 -Aqua-Tec c. 1963-4?
California Products (Boston, Mass.)	New Masters	Ronald Wesley Hayes	-c.1963
Cal-Western Paints Inc. (Santa Fe Springs, California)	water-borne acrylic		after 1965
Chromatech (Montreal, Quebec)	Chromatech (acrylic)	Michael Towe	1979, Montreal area mostly
Craftint Manufacturing Co. (Cleveland)	Un-Art-Co (Universal Colors) later Dev-O-Lac		
Dana Colors, Inc. (San Francisco, Calif.)	Acrycolor		-West coast mostly, c. 1966
DaVinci Paint Company (California)	Artists' Acrylic	Rudolph Dworzak	after 1975
Devoe and Raynolds (later Craftint Devoe) (1 st in Cleveland, Ohio)	Dev-O-Lac		-available by 1956
EVO-ART (Mexico)	EVO-ART	José Luis Gurdubay	before 1965
Gibson Paint Company (Oakland, Calif.)	Polyart		-available by 1966
Golden Artist Colors (New Berlin, N.Y.)	Golden	Sam, Mark and Barbara Golden	1980
Heinz-Jordan (Toronto, Ontario)	Acrilex	Peter Pfenning	after 1965
Hunt (Philadelphia, PA.)	Vanguard Speedball		
IND-ART (Mexico City)	acrylics, vinylites and polyvinyl acetate paints ?	José Luis Gurdubay	after 1965
M. Grumbacher Inc. (New York City)	Hyplar Cel-tested Colors Zec		-c1962, Zec available by late 1950s
Guerra Paints and Pigments (New York City)	Sells binders and pigment dispersions ready to mix	Art and Tara Guerra	1980s

continued. . .

Table 3 (continued): Summary (Key Entrepreneurs and Companies in the U.S., Canada and Mexico with Brand Names and Dates)

...page 2 of table

Company Name and Location	Key Brand Names of Earliest Synthetic Paints	Key Figures in Development of New Media	Date Product Introduced
PDQ (Paints Dry Quick) (San José, Calif.)	alkyds		after 1965
Nova Color (Culver City, Calif.)	Artists' Acrylic Paint		by 1994 in California
Permanent Pigments, Inc. (Cincinnati, Ohio later Kansas)	-Liquitex	Henry Levison	-introduced 1954-5, ads c. 1958
Politec Internacional, S.A. (Mexico City)	-Politec -Luzitron	José Gutiérrez	formulated c. 1955, some, c. 1957, mfg. 1960
Polymer Tempera, Inc. (Somerville, Mass)	Polymer Tempera	Alfred Duca	1945
Selectone (Canada)	Selectone		available in Montreal in 1970s
Shiva (began in Chicago, Ill.)	Shiva Acrylic Colors Signa-Tex	(Ramón Shiva: casein)	c. 1964-5
Standard Brands (The Art Store) (Torrance, Calif.)	(acrylics)		after 1980?
Stevenson's * (Toronto, Ontario)	Artist Acrylic Colors	David Stevenson	c. 1973
Utrecht Linen (Brooklyn plant)	New Temp Acrylic colors	Norman and Harold Gulamerian	1957? ads later
F. Weber and Co. (later Martin/Weber) (Philadelphia, Pa.)	Res-N-Gel, Artist's Latex Polymer Paints, Permalba Acrylics	F. Weber	c. 1957 (Res-N-Gel c. 1964-66 (latex polymers), acrylics later

* Stevenson's of Toronto is not to be confused with J.P. Stephenson of England (York, U.K.) a maker of artists' oil paints.

Note : The above table excludes:

- **paints for crafts and design use** (children's supplies, poster paints, etc.) by such companies as Iddings Paint Company, Dr. Ph. Martin's, Shinhan, Floquil, Rich Art and Artone.

- **manufacturers non-pigmented artists' products** such as varnishes or grounds.

Thus Brooklyn-based artist Charles Seide's company Museum Artist Materials is not listed since it only advertised acrylic gessos, mediums and varnishes, but not paints in the 1950s. Similarly artist and paintmaker Robert Gamblin of Oregon is excluded since he makes oil paints in spite of his use of synthetic resin in varnish.

- **makers of casein paints** based on an historic semi-synthetic product made from milk, unless they also produced paints based on modern synthetic resins.

- **makers of specialty products** which may have contained synthetic resins such as the **wax mediums** for **encaustic painting** which were made by Dorland's and Torche beginning in the 1950s.

Table 4: Summary of Key Entrepreneurs and Companies Making Synthetic Paints for Artists Outside of North American with Brand Names and Dates (c. 1940s-1994)

Company Name and Location	Key Brand Names of Earliest Synthetic Paints	Key Figures in Development of New Media	Date Product Introduced
Calder Colours Ltd. (England)	acrylics		1980s?
Chroma Acrylics (Australia)	Atelier, Chromacryl	Jim Cobb	1960s ? in Australia c. 1980s in U.S.
Derivan (Vynol Paints Pty.) (Australia)	Matisse		c. 1976 in Australia
Ferrario Belle Arti (Italy)	acrylics		available by 1980s
Holbein (Japan)	Acryla Color		available by late 1970s
Lascaux (Switzerland)	Lascaux Acryl	Alois K. Diethelm	c. 1961-62
Lefranc and Bourgeois (France)	Flashe, PolyFlashe	Marc Hamel (Bourgeois)	c. 1955? For formulation, diffusion later
Lukas (Dr. Friedrich Schoenfeld & Co.) (Germany)	Lukascryl		1964 in Europe
(Fratelli) Maimeri (Italy)	Polycolor Air-Pro		available by 1980s
Reeves and Sons, Ltd. (England)	Reeves Polymer Colors		available by 1966
Rowney & Co. (later Daler-Rowney)(England)	Cryla		1963 in U.K. and Europe
Jaurena S.A. (Spain)	Mir (acrylics)		c. 1970?
J.M. Paillard (France)	Louvre (Lambertye)		after 1965
Pebeo (France)	(acrylics)		after 1965
Pelikan (G.H. Smith) (England)	Acrylcolor		after 1965
Schmicke (Germany)	PRIMacryl (acrylics)		not yet in 1965
Talens (Holland)	Rembrandt Acrylic Color		after 1966 in U.S.
Vallejo (Spain)	(acrylics)		available by 1980s
Winsor & Newton (England)	Artists' Acrylic Alkyds		not before mid-1960s
Yasutomo (Japan)	Niji		ads in U.S. in 1969

Note : The above table excludes various manufacturers who produced synthetic paints for arts and craft use, unpigmented media, casein, and specialty items unless they also made synthetic fine arts colors.

Table 5: Selected Artistic and Scientific Affiliations of Key Entrepreneurs and Companies Making Synthetic Paints for Artists in the U.S., Canada and Mexico (c. 1940s-1994)

Company Name and Location	Key Brand Names	Key Figures in Development of New Media	Comments/History/Connections with the Fine Arts or the Sciences (or source of listing)
American Artist Color Works (Brooklyn, N.Y.)	Vanguard	Herb Aach	Aach was an <u>artist</u> , <u>art professor</u> , and active in <u>research</u> on paints in groups like the Inter-Society Color Council and Ralph Mayer's Artist Technical Research Institute. His company was founded by 1953.
Bocour Artist Colors, Inc. was Bocour Hand Ground Artist Colors (New York City then Garnersville, N.Y.)	Magna, Aqua-Tec First full line of oil-compatible acrylics in U.S. (Magna)	Len Bocour Sam Golden	Founded by <u>aspiring artists</u> Len Bogdanoff and Irwin Lefcourt in 1932. Lefcourt left to become <u>curator</u> and <u>art gallery owner</u> . Sam Golden joined in late 1930s and later (1980) started another company. Bogdanoff changed name to Bocour. Bocour sold the company in 1982 to Zipatone and c. 1993 Duro Art Industries (Chicago) bought the formulas and name. Bocour and Golden accumulated <u>collections of avant-garde art</u> which they traded for paint. (Bocour Papers at Archives of American Art and National Gallery of Art, Washington).
California Products (Boston, Mass.)	New Masters	Ronald Wesley Hayes	Hayes was an <u>artist</u> who did an M.F.A. thesis on synthetic painting media. He <u>worked with polymer chemist</u> John Gillis and other technical advisors to develop the artists' paint for the company and later became a college art professor.
Cal-Western Paints Inc. (Santa Fe Springs, California)	water-borne acrylic		Listed in Hebblewhite (1987)
Chromatech (Montreal, Quebec)	Chromatech	Michael Towe	Towe is an <u>artist</u> and a psychologist by training who briefly attended art school before beginning to make acrylic paints, mostly custom orders with technical <u>advice from chemists</u> notably in paintmaking company Sherwin Williams.
Craftint Manufacturing Co. (Cleveland)	Un-Art-Co (Universal Colors)?		Colors mixable with plastic base or other media. Bought Devoe artists' line (pyroxlins)

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Table 5 (continued) : Selected Artistic and Scientific Affiliations of Key Entrepreneurs and Companies Making Synthetic Paints for Artists in the U.S., Canada and Mexico (c. 1940s-1994)

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Company Name and Location	Key Brand Names	Key Figures in Development of New Media	Comments/History/Connections with the Fine Arts or the Sciences (or source of listing)
Dana Colors, Inc. (San Francisco, Calif.)	Acrycolor		Pinney Papers, National Gallery of Art (Washington D.C.)
DaVinci Paint Company (California)	Artists' Acrylic	Rudolph Dworzak	<u>Painter</u> with connections to artists' paint manufacturing in Italy
Devoe and Raynolds (later Craftint Devoe) (Cleveland, Ohio)	Dev-O-Lac (pyroxylin lacquer)		Devoe and Raynolds was founded in 1848. It stopped making artists' paints in 1962 selling that part of company to Craftint.
EVO-ART (Mexico)	acrylics, vinylites and polyvinyl acetate paints	José Luis Gurdubay	Gurdubay is a <u>painter</u> who knew Gutiérrez (Politec) and started making his own synthetic paints in the 1950s. Later started two paintmaking companies, (first IND-ART) but each time ran into financial difficulties. Prepared artists' canvas with <u>artist Luis Filcir</u> .
Gibson Paint Company (Oakland, Calif.)	Polyart		Pinney Papers, National Gallery of Art (Washington D.C.)
Golden Artist Colors (New Berlin, N.Y.)	Golden	Sam, Mark and Barbara Golden	Sam Golden did <u>some painting</u> and was a partner of Len Bocour but retired briefly in 1970s and then set up business with his son and daughter-in-law. Mark did <u>graduate studies in the sciences</u> and then worked in <u>design</u> . The company has an active research program with close contacts to <u>conservation scientists</u> and toxicologists. Employs <u>scientists</u> , consults <u>artists</u> .
Heinz-Jordan (Toronto, Ont.)	Acrilex	Peter Pfenning	Formerly importers of Bocour products.
Hunt (Hunt-Speedball) (Philadelphia)	Vanguard Speedball		Hunt purchased formulas from American Artists' Color Works.
IND-ART (Mexico City)	acrylics, vinylites, etc.	José Luis Gurdubay	see Evo-Art above.

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Table 5(continued) : Selected Artistic and Scientific Affiliations of Key Entrepreneurs and Companies Making Synthetic Paints for Artists in the U.S., Canada and Mexico (c. 1940s-1994)

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Company Name and Location	Key Brand Names	Key Figures in Development of New Media	Comments/History/Connections with the Fine Arts or the Sciences (or source of listing)
M. Grumbacher Inc. (New York City)	Hyplar, Cel-tested Colors, Zec		Company founded in 1903 by Max Grumbacher, a brushmaker who imported Schmincke artists' paints from Germany. A team of <u>chemists</u> was sent by Schmincke to set up paintmaking operation c. 1932-33. Company sold in 1970s and resold several times. Employs <u>artists as consultants</u> and publicists.
Guerra Paints and Pigments (New York City)	binders and pigment dispersions	Art and Tara Guerra	Art is an <u>artist</u> and Tara <u>studied chemistry</u> .
PDQ (Paints Dry Quick) (San José, Calif.)	alkyds		In Hebblewhite (1987) and Gottsegen (1993)
Nova Color (Culver City, Calif.)	Artists' Acrylic Paint		Price list in Pinney Papers. National Gallery of Art (Washington D.C.)
Permanent Pigments, Inc. (Norwood adjacent to Cincinnati, Ohio later plant moved to Winfield Kansas)	-Liquitex (acrylic) First full line of water-borne acrylics in U.S.	Henry Levison	Levison had an Master's degree in <u>chemistry</u> (1928) and friends who were artists in youth. Worked in family lacquer business. Started artists' paint company in 1932. Brother David also managed company. Levison active in research on paint testing and standards. Sold to Binney and Smith, makers of Crayola crayons then both resold to Hallmark Cards. <u>Employs artists as consultants</u> and publicists.
Politec Internacional, S.A. (Mexico City)	-Politec -Luzitron	José Gutiérrez	Founded by <u>artist-researcher-professor</u> José Gutiérrez (who studied art in New York City) and businessman Luis Miró in 1960 but G. Contacts with muralists. Gutiérrez' formulas for synthetic painting media were widely diffused in handbooks, lectures and by many students internationally.
Polymer Tempera, Inc. (Somerville, Mass)	Polymer Tempera First brand of synthetic artists colors in U.S.	Alfred Duca	Duca was an <u>artist, art educator, and children's art teacher</u> who made his formula available to artists in the 1950s after ceasing to sell his artists' colors. The formula was developed with assistance from a chemist from the Borden Chemical company.

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Table 5(continued) : Selected Artistic and Scientific Affiliations of Key Entrepreneurs and Companies Making Synthetic Paints for Artists in the U.S., Canada and Mexico (c. 1940s-1994)

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Company Name and Location	Key Brand Names	Key Figures in Development of New Media	Comments/History/Connections with the Fine Arts or the Sciences (or source of listing)
Selectone (Canada)	Selectone		A commercial house paint manufacturer but did not produce artists' paints regularly
Shiva (began in Chicago, Ill.)	Shiva Acrylic Colors, Signa-Tex	(Ramón Shiva: casein)	Spanish-born artist Shiva (d. 1963) trained and taught at the Art Institute of Chicago before setting up his paintmaking business in 1919. A leader in casein artists' paints, a semi-synthetic. Sold several times.
Standard Brands (The Art Store) (Calif.)	(acrylics)		Listed in Gottsegen (1993)
Stevenson's * (was D.L. Stevenson and Son) (Toronto, Ontario)	Artist Acrylic Colors	David Stevenson	Founded in 1970 by David Stevenson, a war veteran and <u>graduate of the Ontario College of Art</u> who worked as a government electronics inspector. Made oil paints in house in 1960s. Children Robert and Charlotte ran company after his death.
Utrecht Linen (Brooklyn plant)	New Temp Acrylic colors	Norman and Harold Gulamerian	Started around 1949 by brothers Norman and Harold Gulamerian as a linen importing company. Norman was an <u>artist</u> . Harold makes the paint.
F. Weber and Co. (later Martin/Weber) (Philadelphia, Pa.)	Res-N-Gel, Latex Polymer Paints, Permalba Acrylics		Established in 1853 as successors to Janentzky and Weber Manufacturing and Importing Co.. (Company papers at Getty Conservation Institute but limited access.)

Note : The above table excludes various manufacturers who produced synthetic paints for arts and craft use, unpigmented media, casein, and specialty items unless they also made synthetic fine arts colors.

Table 6 : Selected Artistic and Scientific Affiliations of Key Entrepreneurs and Companies Making Synthetic Paints for Artists Outside of North America (c. 1940s-1994)

Company Name and Location	Key Brand Names	Key Figures in Development of New Media	Comments/History/Connections with the Fine Arts or the Sciences (or source of listing)
Calder Colours Ltd. (England)	acrylics		Listed in Hebblewhite (1987)
Chroma Acrylics (Australia)	Atelier Chromacryl	Jim Cobb	Cobb used <u>artist</u> Tom Gleghorn to test his paints.
Derivan (Vynol Paints) (Australia)	Matisse		File from Pinney Papers, National Gallery of Art (Washington)
Ferrario Belle Arti (Italy)	acrylics		Listed in Hebblewhite (1987)
Holbein (Japan)	Acryla Color		File from Pinney Papers, National Gallery of Art (Washington)
Lascaux (Switzerland)	Lascaux Acryl	Alois K. Diethelm	Diethelm, son of a decorative housepainter <u>wanted to be an artist</u> but had to learn a trade. He was trained to make <u>housepaints</u> and sold his commercial paint business to devote his time to artists' colour manufacture.
Lefranc and Bourgeois (France)	Flashe, PolyFlashe, Flashe Vasarely	Marc Hamel (Bourgeois)	Two companies joined c. 1965. Lefranc descended from 1720 company of pigment trader and colourman Charles Laclef, renamed in 1840 by Lefranc brothers, inventors of tube paints. Bourgeois a 19 th c. Firm and innovators in synthetic. Synthetic media developed by handbook author Hamel (1975) <u>a chemist</u> and <u>professor of paintings conservation</u> . Sold to multinational company Col-Art (which also bought Winsor and Newton) in 1990s.
Lukas (Dr. Friedrich Schoenfeld & Co.) (Germany)	Lukascryl (acrylic)		Founded by Franz Schoenfeld in 1862 who learned to make paints from his <u>father</u> , Stephan who was an <u>artist</u> . Company named after St. Luke, patron saint of artists.
(Fratelli) Maimeri (Italy)	Polycolor, Air-Pro		Founded in 1923 by brothers Gianni and Carlo Maimeri. Gianni was a <u>painter</u> and Carlo a <u>chemist</u> . Primarily made artists' oils. Company destroyed in WWII, then rebuilt.
Reeves and Sons, Ltd. (England)	Reeves Polymer Colors		Founded in 1766 by William Reeves, inventor of cake watercolour. Still a family-run business

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Table 6 (continued) : Selected Artistic and Scientific Affiliations of Key Entrepreneurs and Companies Making Synthetic Paints for Artists Outside of North America (c. 1940s-1994)

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Company Name and Location	Key Brand Names	Key Figures in Development of New Media	Comments/History/Connections with the Fine Arts or the Sciences (or source of listing)
Rowney & Co. (later Daler-Rowney) (England)	Cryla		Founded by brothers Thomas and Richard Rowney in 1789 who were trained in <u>chemistry</u> who made perfumes and powders too. Tradition on apprenticeship for family members in firm.
Jaurena S.A. (Spain)	Mir		Began in <u>pigment and oil business</u> in Barcelona in 1933 but stopped production during Spanish Civil War. Resumed in 1939 by <u>Felipe Jaurena Setoain</u> .
J.M. Paillard (France)	Louvre (Lambertye)		In Danion (1990-2)
Pebeo (France)	(acrylics)		Hebblewhite (1987)
Pelikan (G.H. Smith) (England)	Acrycolor		File from Pinney Papers, National Gallery of Art (Washington)
Schmincke (Germany)	PRIMacryl (acrylics)		Founded in 1881 <u>chemists</u> (and brothers-in-law) Josef Horadam and Hermann Schmincke. Dr. Julius Hesse married into family, worked for company and became head. Chemists from Schmincke set up Grumbacher's paintmaking operation in the 1930s in the U.S. where President Peter Hesse was born.
Talens (Royal Talens) (Holland)	Rembrandt Acrylic Color, alkyds		Founded in 1899 by Marten Talens, a retired banker and amateur artist.
Vallejo (Spain)	(acrylics)		Listed in Hebblewhite (1987)
Winsor & Newton (England)	Artists' Acrylic Alkyds		Founded in 1832 by <u>painter/chemist</u> William Winsor and painter Henry Charles Newton. Sold to multinational company Col-Art (which also bought Lefranc and Bourgeois) in 1990s.
Yasutomo (Japan)	Niji (acrylics)		Advertisements appear in U.S. magazines c. 1969

Note : The above table excludes various manufacturers who produced synthetic paints for arts and craft use, unpigmented media, casein, and specialty items unless they also made synthetic fine arts colors.

Table 7: Product Identification of Synthetic Paints for Artists Made by Key Entrepreneurs and Companies in the U.S., Canada and Mexico (1940s-1994)

Company Name and Location	Key Brand Names of Earliest Synthetic Paints & Product Information (acrylic=water-borne acrylic)
American Artist Color Works (Brooklyn, N.Y.)	Vanguard (acrylic)
Bocour Artist Colors, Inc. (New York City then Garnersville, N.Y.)	- Magna (spirit soluble, oil-compatible synthetic resin paints), Magna varnish (vinylite resin) - Aqua-Tec (acrylic)
California Products (Boston, Mass.)	New Masters (acrylic vinyl co-polymer) two grades: artists and illustrators colors
Cal-Western Paints Inc. (Santa Fe Springs, California)	water-borne acrylic
Chromatech (Montreal, Quebec)	Chromatech (acrylic)
Craftint Manufacturing Co. (Cleveland)	Un-Art-Co (Universal Colors)?
Dana Colors, Inc. (San Francisco, Calif.)	Acrycolor (acrylic latex polymers)
DaVinci Paint Company (California)	Artists' Acrylic
Devoe and Raynolds (later Craftint Devoe) (Cleveland, OH.)	Dev-O-Lac (pyroxylin lacquer)
EVO-ART (Mexico)	acrylics, vinylites and polyvinyl acetate paints ?
Gibson Paint Company (Oakland, Calif.)	Polyart (water-borne copolymer polyvinyl acetate)
Golden Artist Colors (New Berlin, N.Y.)	Golden (acrylics, spirit-soluble acrylics and custom synthetic paints for artists and conservators)
Heinz-Jordan (Toronto, Ontario)	Acrilex (acrylics)
Hunt (Hunt-Speedball) (Philadelphia, PA.)	Vanguard (acrylics) Speedball (acrylics)
IND-ART (Mexico City)	acrylics, vinylites and polyvinyl acetate paints ?
M. Grumbacher Inc. (New York City)	Hyplar (acrylic-vinyl copolymer) Cel-tested Colors (?for cartoons on celluloid) Zec (synthetic medium)
Guerra Paints and Pigments (New York City)	Sells binders and pigment dispersions ready to mix
PDQ (Paints Dry Quick) (San José, Calif.)	alkyds
Nova Color (Culver City, Calif.)	Artists' Acrylic Paint

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Table 7 (continued) : Product Identification of Synthetic Paints for Artists Made by Key Entrepreneurs and Companies in the U.S., Canada and Mexico (1940s-1994)

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Company Name and Location	Key Brand Names of Earliest Synthetic Paints & Product Information (acrylic=water-borne acrylic)
Permanent Pigments, Inc. (Cincinnati, Ohio later plant moved to Winfield Kansas)	-Liquitex (acrylic)
Politec Internacional, S.A. (Mexico City)	-Politec (acrylic now, first version was a synthetic tempera) -Luzitron (spirit-soluble acrylic resin lacquer)
Polymer Tempera, Inc. (Somerville, Mass)	Polymer Tempera (polymerized polyvinyl acetate)
Selectone (Canada)	Selectone (acrylics)
Shiva (began in Chicago, Ill.)	Shiva Acrylic Colors (acrylics) Signa-Tex
Standard Brands (The Art Store) (Torrance, Calif.)	(acrylics)
Stevenson's * (Toronto, Ontario)	Artist Acrylic Colors
Utrecht Linen (Brooklyn plant)	New Temp Acrylic colors
F. Weber and Co. (later Martin/Weber) (Philadelphia, Pa.)	Res-N-Gel (colloidal synthetic resin gel) -Artist's Latex Polymer Paints -Permalba Acrylics

Note : The above table excludes various manufacturers who produced synthetic paints for arts and craft use, unpigmented media, casein, and specialty items unless they also made synthetic fine arts colors.

Table 8: Product Identification of Synthetic Paints for Artists Made by Key Entrepreneurs and Companies Outside of North America(1940s-1994)

Company Name and Location	Key Brand Names of Earliest Synthetic Paints & Product Information
Calder Colours Ltd. (England)	acrylics
Chroma Acrylics (Australia)	Atelier (Impasto acrylics for artists) Chromacryl (student grade acrylics)
Derivan (Vynol Paints Pty.) (Australia)	Matisse (acrylics and vinyl?)
Ferrario Belle Arti (Italy)	acrylics
Holbein (Japan)	Acryla Color
Lascaux (Switzerland)	Lascaux Acryl (acrylics, several types) -Also makes spirit-soluble acrylics (like Magna) for restoration.
Lefranc and Bourgeois (France)	Flashe (synthetic polymer) PolyFlashe (acrylic-vinyl) Flashe Vasarely (acrylic-vinyl)
Lukas (Dr. Friedrich Schoenfeld & Co.) (Germany)	Lukascryl (acrylic)
(Fratelli) Maimeri (Italy)	Polycolor (acrylics) and Air-Pro (liquid acrylics)
Reeves and Sons, Ltd. (England)	Reeves Polymer Colors (acrylics)
Rowney & Co. (later Daler-Rowney) (England)	Cryla (acrylics)
Jaurena S.A. (Spain)	Mir (acrylics)
J.M. Paillard (France)	Louvre (Lambertye)
Pebeo (France)	(acrylics)
Pelikan (G.H. Smith) (England)	Acrylcolor (acrylics)
Schmicke (Germany)	PRIMacryl (acrylics)
Talens (Holland)	Rembrandt Acrylic Color plus alkyls
Vallejo (Spain)	(acrylics)
Winsor & Newton (England)	Artists' Acrylics. Alkyls
Yasutomo (Japan)	Niji (acrylics)

Note : The above table excludes various manufacturers who produced synthetic paints for arts and craft use, unpigmented media, casein, and specialty items unless they also made synthetic fine arts colors.

Table 9: Themes in High Culture Discourse related to Materials (Life Story Interview Findings)

Theme	Issue	Descriptors (examples)
Practical Issues		
	working qualities (see also aesthetic dimensions)	-simplicity of use -versatility
	cost	-as a function of artists' resources -as a constraint on creative potential
	health and comfort	-long-term health effects -short-term issues (ex. noxious fumes, neighbours complaints)
	availability	-rapid access -relations with suppliers
	reliability	-consistency in quality -permanence
Aesthetic and Socio-Aesthetic Dimensions		
	theoretical issues	-the nature of art (Does it have to be objectified? Do materials determine what is art and what isn't art? Place of reception in the construction of artistic values) -aesthetic rights or responsibilities of the artist, ideas about the nature of artistic expression/creation
	empirical issues (relations with studio practices, working qualities)	-visual appearance (gloss or matte finish, colour, acceptable grounds) -tactile qualities (speed of drying, viscosity, etc.)
Social, Economic, Political and Other Ideological Concerns		
	position in the artistic field (relationship with other artists and art forms, current and historical)	- peers (who else uses or has used the medium or technique?) - relations with mediators and gatekeepers (critics, museum curators, dealers, markets) - publics (association with highbrow or lowbrow taste cultures)
	socio-symbolic, political and ideological issues in the specific socio-historic context	- status of the artist (socio-economic factors, interaction of artisanal and conceptual/intellectual activities) - position of art and the artist in more general ideological and cultural debates
Socio-Psychological Concerns		
	personal identity and social presentation of self	-appropriateness of choice for sense of self
	emotional, expressive concerns	-sense of distance or immediacy offered by medium or technique -ability of medium or technique to respond to creative urges/visions

Table 10: Sources of Information about Materials and Techniques (Life Story Interview Findings)

Type of Information	Contents	Source (add "trial and error" and "self-taught" in all cases)
traditional media commonly used in academic programs (oil, gouache, drawing media etc.)	-straightforward information about proprietary brands and simple ways of using them	-art school or art courses in other programs -art supply stores
	-information on how to prepare them from raw materials and about advanced techniques	-artists' handbooks -other artists
historic techniques (fresco, egg tempera, encaustic, etc.)	-finding out about them	-artists' handbooks -art magazines
	-use and preparation	-artists' handbooks
unconventional modern media available ready-to-use or almost (automotive lacquers, commercial paints, Spackle, etc.)	-finding out about them	-articles in the general press about artists, in art magazines -other artists -visits to hardware stores and shops selling specialized paints (e.g. auto-body shops) -observations during art gallery and museum visits
	-use and special techniques of application	-other artists -dealers in shops and technical sales representatives of suppliers
synthetic media which had to be prepared from chemical products (polyvinyl acetate formulas, etc.)	-finding out about them, preparation, use and special techniques of application	-other artists -dealers in shops and technical sales representatives of suppliers -art magazines
ready-to-use synthetic media made for artists (casein, oil-compatible acrylic resin paints, water-borne acrylics)	-finding out about them, and learning techniques for using them	-art magazines -other artists - conservators and technical experts (i.e. Ralph Mayer) -art supply stores -observations during art gallery and museum visits - at art school (from students)
general ideas about the place of materials and technique in artistic practice	-finding out about them	-art school teachers -general reading in philosophy, art history, aesthetics, criticism -other artists -life experiences -artists' handbooks
	-applying ideas to own work	-general reading in philosophy, art history, aesthetics, criticism -other artists -life experiences -artists' handbooks

Table 11: Selected Monographs on Synthetic Painting Media (in chronological order of publication)

book	background & Socio-professional identification of author	connection with paintmaker?	intended use or audience (Explicit=E Implicit=I)	formulas to make own paints ?	use of industrial/ commercial paints?	Mentions brands of synthetic paints for artists?	Shows subjects to paint?	ranking by Keyser (see key below)
Gutiérrez, José L. <i>From Fresco to Plastics: New Materials for Easel and Mural Paintings</i> , National Gallery of Canada, Ottawa, 1956. 89pp. (based on 1949 manuscript)	-artist, researcher, professor (Polytechnic Institute, Mexico) -Mexican-born, New York art studies, contacts with muralists	- becomes a paintmaker in late 1950s	-working artists (E), students (I) designers & architects (I)	yes, most of book	yes pyroxylics (Duco)	no	no	SG =2D BM=1D V =2D ST=1D C =2D F =2D P =2D TS=2D
Brooks, Leonard. <i>Oil Painting: Traditional and New</i> . New York : Reinhold, 1959. 160pp.	-artist, art teacher, author -British-born and raised in Canada, WWII war artist, moved to Mexico in 1947	-mentions Gutiérrez but before he began his paintmaking business (Politec)	beginners, students (E) amateurs (I) but advanced information about formulas	yes many in short but dense technical section	yes pyroxylics (Duco and Cilco in Canada)	Magna (Bocour), Liquitex (Permanent Pigments), Polymer Tempera, Shiva, Utrecht	yes, ¼ of book (includes abstract)	not ranked
Anon. <i>Polymer Tempera Handbook</i> , Somerville, Mass.: Polymer Tempera Inc., n.d. (before 1959).	-developed by Alfred Duca, artist, art educator		dk	dk	dk	dk	dk	not ranked

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Table 11 (continued) : Selected Monographs on Synthetic Painting Media (in chronological order of publication)

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book	background & Socio-professional identification of author	connection with paintmaker?	intended use or audience (Explicit=E Implicit=I)	formulas to make own paints ?	use of industrial/ commercial paints?	Mentions brands of synthetic paints for artists?	Shows subjects to paint?	ranking by Keyscr (see key below)
Jensen, Lawrence. <i>Synthetic Painting Media</i> . Englewood Cliffs, N.J.: Prentice-Hall, 1964.	-WWII war artist, art professor at Castleton State College, Vermont, book based on Ph.D. thesis in art education at Columbia	-thanks paintmaker in preface but no employment affiliation -borrows heavily from Gutiérrez	-college-level art students, artists (I) but advanced information about formulas	yes, many of the same ones as Gutiérrez	yes pyroxylins (Duco)	Magna (Bocour) Liquitex (Permanent Pigments) Politec, Polymer Tempera.	no	BM=1D ST=2D P = 2D TS=2D
Woody Jr., Russell O. (with a technical appendix by Henry W. Levison). <i>Painting with Synthetic Media</i> , New York : Van Nostrand Reinhold Co., 1965, 160pp. (Woody wrote another in 1974)	-artist, teacher and lecturer on art techniques, studied art in the U.S. and Mexico, consultant to paintmaker Levison -revised version of his Master's thesis	-attended Gutiérrez' workshop, worked for Levison, knew Bocour and in contact with others	-artists (E), art students & amateurs (I)	some, opposes ethyl silicate	briefly	Magna, Aqua-Tec (Bocour), Hyplar (Grumbacher), Liquitex (Permanent Pigments), New Masters (California Colors) Politec, Polymer Tempera, Shiva		

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Table 11 (continued) : Selected Monographs on Synthetic Painting Media (in chronological order of publication)

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book	background & Socio-professional identification of author	connection with paintmaker?	intended use or audience (Explicit=E Implicit=I)	formulas to make own paints ?	use of industrial/ commercial paints?	Mentions brands of synthetic paints for artists?	Shows subjects to paint?	ranking by Keyser (see key below)
Mills, John FitzMaurice. <i>Acrylic Painting</i> . Foreword by Tom Rowney. London: Sir Isaac Pitman and Sons, 1965. 125+pp.	-artist, president Royal Drawing Society, author of 40+ art books, T.V. scriptwriter	-Rowney a paintmaker	-artists & advanced art students (I)	no	no	Cryla (Rowney)	no but profiles on 15 artists	not ranked
Fabri, Ralph. <i>The Art of Polymer Painting</i> . New York: Reinhold, 1966, 88 pp.	-graphic artist & water-colourist, author of other manuals, professor, editor, Hungarian-born	No	-amateur artists, set design (E) illustrators, graphic arts students (I),	no	not clear, no specific discussion commercial or artists' paints	no, brief general introduction to materials	yes, step-by-step projects, none abstract	not ranked
Gutiérrez, José and Nicholas Roukes (preface by David Alfaro Siqueiros) <i>Painting with Acrylics</i> . New York: Watson-Guption Publications, 1966, 191pp.	-see above for Gutiérrez -Roukes: artist, art professor (U.S. and Canada), sojourn in Mexico & participant in Gutiérrez' workshop	- Gutiérrez a paintmaker at time of publication (Politec)	-artists (muralists, easel painters illustrators) (E), art educators, "serious Sunday painters" (E)	-yes, seven different basic types	yes pyroxylin	Magna, Aqua-Tec (Bocour), Cryla(Rowney), Hyplar (Grumbacher), Liquitex (Permanent Pigments), New Masters (California Colors), Politec, Polyart(Gibson) Reeves, Shiva, Weber etc.	yes, about 1/3 of book deals with projects, some abstract	SG =2C BM=1C Pi = 2C V = 2C ST=1C F = 1C P = 2C TS= 2C

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Table 11 (continued) : Selected Monographs on Synthetic Painting Media (in chronological order of publication)

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book	background & Socio-professional identification of author	connection with paintmaker?	intended use or audience (Explicit=E Implicit=I)	formulas to make own paints ?	use of industrial/ commercial paints?	Mentions brands of synthetic paints for artists?	Shows subjects to paint?	ranking by Keyser (see key below)
Chavatel, George. <i>Exploring with Polymer. A Guide to New Media for Young Adults</i> . New York: Reinhold Publishing Corp. 1966. 104pp.	-art teacher (high school)	-not mentioned but Liquitex (Permanent Pigments) illustrated	-school teachers (elementary and high school)	-not paints but in mixed media	no	in list at end only	general ideas, illustrated	not ranked
Hayes, Ronald. <i>The Art of Polymer Painting</i> . n.p. Fine Arts Division, Hunt Manufacturing Division, 1968, 86 pp.	-artist "with a chemical background", art professor at Mass. College of Art, paintmaker, M.F.A. thesis on synthetic media	-developed New Masters paints made by California Colors (part of Hunt Co.)	- beginners or experienced painters (E) -short introduction for amateur artists (I)	no	no	New Masters (California Colors)	yes, many step-by-step projects (figures, still life, abstract etc.)	not ranked
Pellew, John. <i>Acrylic Landscape Painting</i> . New York: Watson- Guptill, 1968, 160 pp.	-artist, magazine writer, author of other artists' manuals		-beginners, amateurs (I)	dk	dk	dk	yes, techniques for landscape	not ranked
Raynes, John. <i>Starting to Paint with Acrylics</i> . New York: Watson-Guptill, 1969 104pp.	-"professional painter", art teacher		-amateur, "untrained" painters (E)	no	no	no	no, own work illustrates techniques	not ranked
Taubes, F. <i>Acrylic Painting for the Beginner</i> . New York: Watson-Guptill, 1970, 144 pp.	-artist, author of many handbooks, technical advice columnist	- formulas used by Permanent Pigments	-beginners, amateurs				yes, (still life, figure painting, etc.)	not ranked

continued . .

Table 11 (continued) : Selected Monographs on Synthetic Painting Media (in chronological order of publication)

page 5 of table

book	background & Socio-professional identification of author	connection with paintmaker?	intended use or audience (Explicit=E Implicit=I)	formulas to make own paints ?	use of industrial/ commercial paints?	Mentions brands of synthetic paints for artists?	Shows subjects to paint?	ranking by Keyser (see key below)
Blake, Wendon. <i>Acrylic Watercolor Painting</i> . New York: Watson-Guptill, before summer 1970.	-artist, magazine writer, author of other artists' manuals		-amateur artists, beginners	no	no		yes, step-by-step techniques illustrated	not ranked
Gettings, Fred. <i>Polymer Painting Manual</i> . London: Studio Vista. 1971. 127pp.	-artist, editor, British		-artists, art students, teachers (E)	yes about 1/3 of book	no	only in suppliers list at end	no but illustrated (by self & others)	not ranked
Sheaks, Barclay. <i>Painting with Acrylic from Start to Finish</i> . Worcester, Mass.: Davis, 1972.	-see 1985 below		-amateurs					not ranked
Kortlander, William. <i>Painting with Acrylics</i> . Cincinnati: Van Nostrand Reinhold, Art-in-Practice Series. 1973. 160pp.	-artist		-amateur artists				-step-by step painting project	not ranked
Blake, Wendon. <i>Complete Guide to Acrylic Painting</i> . New York: Watson- Guptill, before summer 1974?	-artist, magazine writer, author of other artists' manuals		-amateur artists				techniques illustrated by known painters	SG =2B BM=2B Pi = 2C V = 2C ST=1A P = 2B

continued . .

Table 11 (continued) : Selected Monographs on Synthetic Painting Media (in chronological order of publication)

page 6 of table

book	background & Socio-professional identification of author	connection with paintmaker?	intended use or audience (Explicit=E Implicit=I)	formulas to make own paints ?	use of industrial/ commercial paints?	Mentions brands of synthetic paints for artists?	Shows subjects to paint?	ranking by Keyser (see key below)
Woody Jr., Russell O. <i>Polymer Painting and Related Techniques, with course outline and works of prominent artists.</i> New York: Van Nostrand Reinhold Co., 1974. 109pp.	-see above (1966)	-consultant at Permanent Pigments at the time -see above	- college level course outline (E) -also high school (E), amateur & professional use (E)	no	no	Magna, Aqua-Tec (Bocour), Liquitex (Permanent Pigments), New Masters (California Colors), Politec	no but techniques illustrated with work by known artists	SG =2D BM=2B Pi =1A V =2C ST=1C C =2C F =2C P =2B TS=2D
Anonymous. <i>Enduring Colors for the Artist, A treatise on permanence in painting.</i> Cincinnati, Ohio: Permanent Pigments, 1975. 49 pp. (completely revised version in series with same title)	-probably partly written by paintmaker Henry Levison, includes much of his research on testing	-paintmaker (Liquitex)	-artists, dealers (I) -technical introduction to chemistry & testing of products	no	no	Liquitex (Permanent Pigments)	no	SG =2B BM=2C Pi =1B V =2C F =2C P =2B
Mills, John FitzMaurice. <i>Materials and Techniques of Acrylic Painting.</i> London: Fredrick Warne, 1981. 48pp.	-see above 1965	(formerly associated with Rowneys)	-unclear, possibly for teachers of child and crafts courses	no	no	no	no specific projects but ideas for types	not ranked

continued . .

Table 11 (continued) : Selected Monographs on Synthetic Painting Media (in chronological order of publication)

page 7 of table

book	background & Socio-professional identification of author	connection with paintmaker?	intended use or audience (Explicit=E Implicit=I)	formulas to make own paints ?	use of industrial/ commercial paints?	Mentions brands of synthetic paints for artists?	Shows subjects to paint?	ranking by Keyser (see key below)
Sheaks, Barclay. <i>Acrylic Painting Techniques</i> . Huntington Beach, California: KOCE-TV/ Grumbacher. 1985.	-artist, handbook author, college art professor, T.V. show (Acrylic Painting)	-endorses Hyplar by Grumbacher (sponsor)	-T.V. show audience & beginners	no	no	Hyplar (Grumbacher)	yes, discussion of projects & finished paintings	not ranked
Gutiérrez, José. (preface by Arnold Belkin). <i>Del fresco a los materiales plásticos</i> . Mexico City: Instituto Politécnico Nacional, 1986, 79+pp.	-posthumous, see 1956 & 1966 above -Belkin, artist born in Canada, Siqueiros' student	Politec	- Spanish version of 1956 above, a few pages added on acrylic paints	yes, most of book	yes pyroxylin (Duco)	yes, Politec	no	not ranked
Dewitz, Arden von. <i>A Fun Book on Acrylic Painting Polymer</i> . Walter Foster Art Library, n.d. (before 1981)			-beginners (I)				yes	ST=1D
Danion, Patrick. <i>La peinture acrylique. Phénomène artistique</i> . Paris: Fleurons. n.d. (c.1990-1992)	-artist, French		-artists	no	yes	yes, many European brands plus Liquitex (Permanent Pigments)	poetic discussion with author's works	not ranked

Table 12: Selected Books on Synthetic Media for Various Art Forms Including Some Information about Painting to 1980

book	background & Socio-professional identification of author	connection with paintmaker ?	intended use or audience (Explicit=E Implicit=I)	formulas to make own paints ?	use of industrial/ commercial paints?	Mentions brands of synthetic paints for artists?	Shows subjects to paint?	ranking by Keyser (see key below)
Neuman, Thelma R. <i>Plastics as an Art Form</i> . Philadelphia: Chilton Book Co. 1964, 1969 (revised). 371pp.	- sculptor , Ph.D. in art education, Society of Plastics Engineers		-artists, craftspeople art educators (E), very technical	some	briefly pyroxylics (Duco)	yes, Magna and Liquitex in text and others in suppliers list	techniques illustrated	BM=2D ST=1B C =2D F =2C P =2D TS=1D
Hollander, Harry B. <i>Plastics for Artists and Craftsmen</i> , New York: Watson- Guptill, 1972. 221pp	-stained-glass artist, industrial chemist, coating manufacturer & consultant in Montreal (plastics in architecture), U.S. studies		-artists, craftspeople (E) , very technical applications of chemistry and engineering	yes, most of book formulas (molds & casting) but not much on painting	not brands but formulas	no	techniques illustrated	not ranked

Table 13: Selected Artists' Handbooks with Some Information on Synthetic Media (alphabetical order)

book	background & Socio-professional identification of author	Intended Use or Audience, Comments	ranking by Keyser (see key below)
Doerner, Max. <i>The Materials of the Artist and their Use in Painting with Notes on the Techniques of the Old Masters</i> . (Eugen Neuhaus, trans.). New York: Harcourt, Brace & World. 1962 revision of 1934 trans. 435 pp.	-artist, researcher, professor of art techniques, member of society for rational painting, German	-posthumous revised translation based on 5 th revision of Doerner's book which was first published in 1921 -for artists, conservators, and collectors (E) -contains very little material on synthetic media but brief treatment in the section on binding media for oil painting touches on nitrocellulose lacquers (with a recommendation of Duco lacquers in a translator's note), polyvinyl resin and admonitions for caution due to observed discoloration.	No modern ratings
Gettens, Rutherford J. And George L. Stout. <i>Painting Materials. A Short Encyclopedia</i> . 2 nd ed., New York: Dover, 1966, 333pp.	-art conservators, researchers, professors of art conservation	-museum curators, conservators (E) -use by practicing artists also mentioned -a compilation of technical information from manufacturers and scholarly publications, revised to expand coverage of synthetic media	SG =2C BM=2C V =2C C =2A F = 2B P = 2C TS=2C
Gottsegen, Mark David. <i>The Painter's Handbook</i> . New York: Watson-Guption. 1993. 320 pp.	-artist, art professor (U.N.C. at Greensboro), work on standards for artists paints	-former student of handbook author Reed Kay (below), many contacts with paintmakers, researchers and conservators through work on standards. Chairman of Sub-Committee on Artists' Paints and Related Materials of American Society for Testing and Materials -comprehensive up-to-date handbook on contemporary materials and methods for artists (E), advanced university level or professional -accessible but detailed technical information including formulas and testing techniques	not ranked

continued . . .

Table 13 (continued): Selected Artists' Handbooks with Some Information on Synthetic Media (alphabetical order)

page 2 of table

book	background & Socio-professional identification of author	Intended Use or Audience, Comments	ranking by Keyser (see key below)
Hamel, Marc. <i>La technique du tableau</i> 2 nd edition. Paris: Dessain et Tolra. 1975. 296pp.	-chemical engineer, researcher, paintmaker, professor of art conservation, French	-worked for paintmaking firm Lefranc et Bourgeois and developed Flashe synthetic paint described as a tempera based on vinyl -text probably intended for introductory college-level course in paintings conservation and may be based on the author's lecture notes given discursive style -chaotic amalgam of technical information including historical and contemporary practices -short chapter on vinyl and acrylic resin artists' paints plus scattered mentions of the new material throughout the book	not ranked
Hebblewhite, Ian. <i>The North Light Handbook of Artists' Materials</i> . Cincinnati: North Light, 1986, 288pp.	-watercolourist, consultant in art materials trade, British	-artists (E), art materials manufacturers, distributors and dealers (I) -combines information from artists' manuals like Doerner, Mayer and Hiler with literature from manufacturers and test results on tools and materials giving very detailed information on brands and manufacturers	not ranked
Hiler, Hilaire. <i>The Painter's Pocket Book of Methods and Materials</i> . New York: Watson Guptill, 1970.	-British author	-"trade" pocketbook for the painter's "craft" (E), for artists and students -updated and condensed version of a 1937 British text. includes an appendix "Notes on New Materials, Etc." which mentions P.V.A. (polyvinyl acetate) and acrylic emulsions in brief literary style	BM=2D
Kay, Reed. <i>The Painter's Companion. A Basic Guide to Studio Methods and Materials</i> , Cambridge: Webb, 1961	-artist, art professor (Boston U.)	-dedicated to painter and teacher Karl Zerbe, known for his experimental use of synthetic media -short chapter on "synthetic resin paints" -gives polymer tempera formula from Alfred Duca (polyvinyl acetate emulsion)	SG =2B BM=2B F =2B P =2B TS =2B
Lamb, Lynton. <i>Materials and Methods of Painting</i> . New York: Oxford U. Press. 1970. 112pp.	-artist, art instructor (Slade School), British	-handbook for art students and artists (E) -short chapter on synthetic painting media mentions paintmaker Len Bocour and Tom Rowney	not ranked

continued . . .

Table 13 (continued): Selected Artists' Handbooks with Some Information on Synthetic Media (alphabetical order)

page 3 of table

book	background & Socio-professional identification of author	Intended Use or Audience, Comments	ranking by Keyser (see key)
Langlais, Xavier de. <i>La technique de la peinture à l'huile</i> . Paris: Flammarion. 1973 (1959 original). 493pp.	-art professor, French	-for advanced art students, artists, conservators and connoisseurs (I) - lengthy supplement on vinyl and acrylic painting media provides the author's assessments of the characteristics of the new media (often repeated by other French authors) but technical information which has been disputed by conservators	not ranked
McCann, Michael. <i>Artist Beware</i> . New York: Watson-Guptill, 1975.	-artist	-for artists and art student (E) -specialized book on health hazards treating both materials and techniques	TS = 1A
Massey, Robert. <i>Formulas for Painters</i> . New York: Watson-Guptill, 1967.	-artist, art professor at U. of Texas (El Paso)	- reference for serious painters (E) -a few formulas using synthetic media for grounds, paints, varnishes etc.	Not ranked
Mayer, Ralph. <i>The Artist's Handbook of Materials and Techniques</i> . Editions 2-3. New York: Viking. 1957, 1970. (last edition 1982). 749pp. (1973).	-chemist, artist, restorer, author, professor of techniques, work on standards	-very comprehensive reference for serious artists, students, conservators (I) -brief mentions of synthetic media in 1957 edition (in sections on oil and mural painting, chemistry of synthetic resins & "special ready-made" materials like Magna). In the 3 rd third edition, expanded coverage of synthetic resins in paints in the oil painting section plus a short new chapter called "the new materials".	BM=2C ST = 2C P = 2C TS = 2C
Mayer, Ralph. <i>The Painter's Craft</i> . New York: Van Nostrand. 1948. 218pp.	-see above	-text for class or workshop and guide for practicing painters (E) -some mention of synthetic media but prior to introduction of proprietary brands of synthetic artists' colours.	SG = 2C BM=2C V = 2B TS=2C
Smith, Ray. <i>The Artist's Handbook</i> . New York: Knopf, 1987. 352pp.	-artist, art instructor, British	-profusely illustrated, "practical" handbook for artist (E) and college-level art student (I) emphasizing tools and techniques of execution (an intermediate level "how-to-book") -some treatment of synthetic media throughout text	not ranked
Stephenson, Jonathan. <i>The Materials and Techniques of Painting</i> . London: Thames and Hudson. 1989. 192 pp.	-painter, paintmaker (custom paints), British	-for painters (E), amateurs and connoisseurs (I) many illustrations of historic works -very perfunctory section on acrylics and some scattered mentions of synthetic media throughout	not ranked

continued . . .

Table 13 (continued): Selected Artists' Handbooks with Some Information on Synthetic Media (alphabetical order)

page 4 of table

book	background & Socio-professional identification of author	Intended Use or Audience, Comments	ranking by Keyser (see key below)
Taubes, Frederic. <i>The Painter's Dictionary of Materials and Methods</i> . New York: Watson-Guipill, 1971.	-painter, author, art teacher, Polish-born, U.S. citizen	-dictionary for artists, connoisseurs, students -one of many books on painting by the author -slightly disorganized with tendency toward non-technical interpretations	SG=2C BM=2B Pi =2B V =2C ST =2B C=2D P =2C TS =2D
Watson, Dori. <i>The Techniques of Painting</i> . New York: Galahad. 1970. 160 pp.	-book-illustrator, painter, teacher at Chouinard School	-for beginners and amateurs -very brief non-technical section introducing polymer painting and suggesting Woody's 1974 book for more information	not ranked
Wehlte, Kurt. (Ursus Dix, trans.). <i>The Materials and Techniques of Painting</i> . New York: Van Nostrand Reinhold, 1975 (of 1967 German original). 647pp.	-professor, conservator, editor of scholarly reviews, German	-encyclopedia reference book for artists, serious advanced art students and conservators (E) -a very technical approach with copious information about sythetic painting media in meticulously organized, systematic text with recipes and detailed instructions	SG=2B BM=2C V = 2C ST=2B C =2C P = 2C TS=2C

Sources : The above tables represent an analysis by the author except for the information presented in the last column where some rankings of coverage in manuals of modern materials and techniques from a 1980 paper by conservator Barbara Keyser have been indicated. (Keyser also ranked coverage of traditional materials and techniques.) Note that Keyser evaluates these books from the perspective of a 1980 art conservator in light of then-current wisdom, not in the historic context but this provides a sociologically interesting assessment by a participant at the end of the period under consideration. Her ranking system follows.

Key to Keyser's Ranking System

(from Keyser, Barbara. *Encyclopedias of Ignorance. A Critical Look at Twentieth-Century Artists' Manuals*. Unpublished manuscript of paper given at the Symposium on Conservation of Contemporary Art held at the National Gallery of Canada in 1980.)

Topics are ranked by Keyser according to two variables: amount of information and quality as follows:

-amount of information 1. Extensive
 2. sufficient for some understanding of topic

-quality of information A = excellent
 B = good
 C = fair
 D = poor.

Abbreviations used for selected topics related to modern media and techniques ranked by Keyser are:

SG = supports and grounds

BM = binding media

P = pigments

V = varnishes

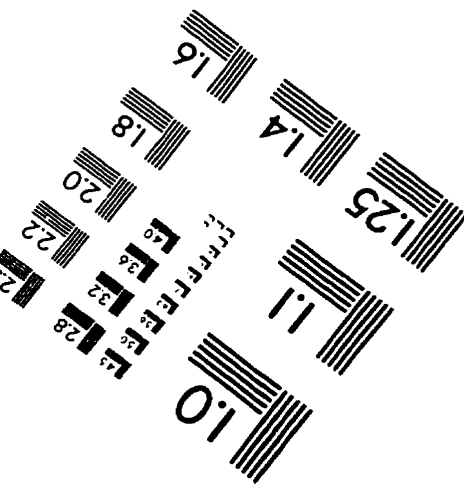
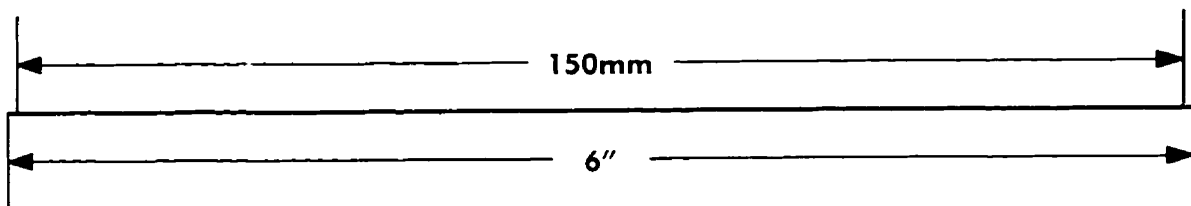
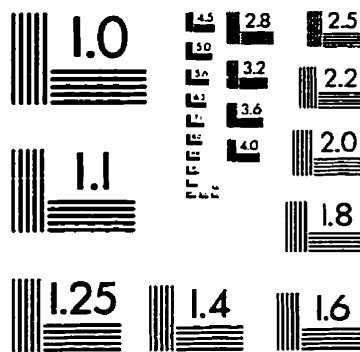
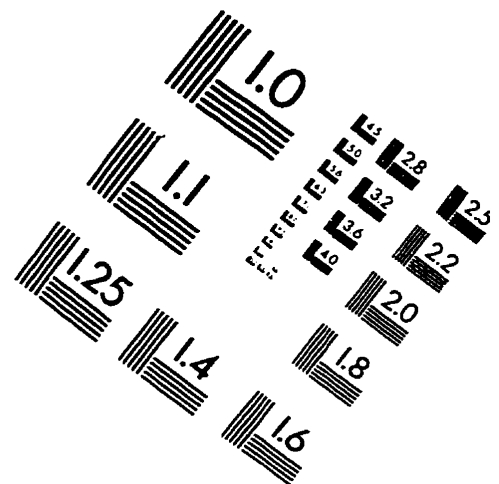
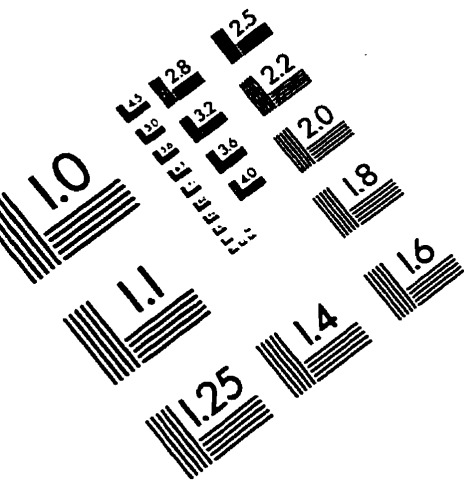
ST = studio techniques

F = formulation

P = permanence

TS = toxicology/safety (for all media combined)

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