Bringing Home Methylmercury:

The Construction of an Authoritative Object of Knowledge for a Cree Community in Northern Quebec

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Abstract:

The thesis examines aspects of the construction of methylmercury as an authoritative object of knowledge for Chisasibi, a Cree community on the James Bay coast in northern Quebec. I describe the evolution of a particular set of *spheres of exchange* which mediate economic relations between the Cree communities, the governments of Québec and Canada, and state and corporate structures tied to the state. Knowledge claims about mercury can be seen as situated among claims of injury in a moral economy which is based on conflict over the James Bay hydro-electric project. The politicization and subsequent medicalization of these knowledge claims are described. Finally, I trace the emergence of particular concepts of 'normality', 'risk' and 'risk group' in medical and technocratic discourses about the effects of methylmercury on Canadian aboriginal populations.

La thèse examine les aspects de la fabrication du methylmercure comme objet de connaissance autoritaire pour Chisasibi, un communauté Cris sur la côte de la Baie James au nord du Québec. Je décris l'évolution de quelques *milieux d'échange* entre les communautés Cris, l'état du Québec et les corporations liées à l'état. Prétentions de connaissance au sujet du methylmercure sont vues comme étant situées parmi plusieurs accusations de responsabilité dans une économie morale distincte. Cette économie est en grande mesure fondée sur un conflit concernant le développement hydro-électrique de la Baie James. Je décrit la politisation et puis la médicalisation de cette connaissance du methylmercure. Enfin, je suis l'apparition des concepts particuliers de 'la normalité', de 'la risque', et des 'groupes à risque' dans un discours médical et technocratique qui décrit les effets du methylmercure sur les populations autochtones à Canada.

Acknowledgements:

The research on which this thesis is based was supported in 1991-93 by a McGill Major Fellowship from the McConnell Foundation, a Northern Scientific Training Grant from the McGill Centre for Northern Studies and Research, a research grant from the Mercury Committee, and a Schering Postgraduate Study Award administered through the College of Family Physicians of Canada.

It would not have been possible to write the thesis had not the following people been willing to talk frankly with me about their experiences with mercury and a host of other things: Peter Atkinson and Helen Bobbish Atkinson, Violet and Natasha Bates, Eddie Bearskin, Maggie Bearskin, Margaret and Samuel Bearskin, William Bearskin, James Bobbish, James and Queenie Chiskamesh, Philip Cox, Margaret and William Cromarty, Richard Cromarty, Jane Sam Cromarty, Gerald Dion, Charles Dumont, Sidney Fortchimo, Gilbert Herodier, Deborah House, Larry House, Walter Hughboy, Isabelle Kanapowsit, George and Simone Lameboy, Pauline Langdon, Suzanne Lebizay, Robbie Matthew, Abraham Pachanos, Clifford Pachanos, Eddie Pachanos, Hannah and William Pachanos, Violet Pachanos, Nellie Pash, Abraham and Mina Pasiniquan, Allan Penn, Joseph and Mary Pepabano, Beatrice Petawabano, Père Alain, Dino Ramzi, Billy Rupert, Eddie Rupert, Josie Sam, Sam Sandy, Pierre Senecal, Helen Smeja, Annie Snowboy, Anne Snowboy, Harry Snowboy, Elizabeth and George Snowboy, Richard St. Jean, Johnny Swallow, and Mina Tapiatic. I owe particular thanks to Margaret and William Cromarty, Billy Rupert Jr. and Anne, Noah, and Harry Snowboy and their families for treating me like a friend, and taking me into their homes sometimes. Eddie Bearskin, Suzanne Lebizay and Harry Snowboy patiently translated and explained things to me. Graham Reid helped with the French translation of the abstract. Cynthia Scott tried to tell me to keep it simple.

I would also like to express my gratitude to the Mercury Subcommittee on Social Studies for its support of my participation into research into social aspects of the mercury problem.

Allan Penn, Allan Young and Ann Yeh provided me with invaluable guidance and support of one sort or another during my attempts to figure out what a thesis in medical anthropology should be and how to go about thinking and writing about this peculiar topic. I am also extremely grateful to James Bobbish, Alberto Cambrosio, Charles Dumont, Toby Morantz, Nellie Pash and Colin Scott for their valuable criticism of various drafts of this thesis.

However, I alone bear final responsibility for the opinions expressed in the thesis, and for any errors of omission or commission which it contains.

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Bringing Home Mercury: The Production of an Object of Knowledge for a James Bay Cree Community

Chapter 1: Introduction

Part A: The Problem

On a community bulletin board in the Chisasibi Commercial Centre in the summer of 1991, there was a Greenpeace pamphlet which predicted that, if the James Bay Hydro-Electric Project continues:

> Flooding the James Bay region will worsen global warming. Decomposition of the flooded vegetation and the clear-cutting of trees will release millions of tons of the Greenhouse gasses methane and carbon dioxide to the atmosphere. Furthermore, rotting vegetation will leach methyl mercury into the water, contaminating the fish and the animals and the Native peoples who eat them...Since [the damming of the La Grande River], tests in several Inuit and Cree villages revealed mercury levels in mother's milk far exceeding levels considered safe by the World Health Organization, and two-thirds of the Cree children tested positive for mercury poisoning.

Beside it another pamphlet quoted an article from the Toronto Globe and Mail which described the problem in no uncertain terms. It said:

> In 1984, two of every three people in Chisasibi, a village of 2,500 at the mouth of the La Grande river had unacceptably high levels of mercury in their bodies... Some elders registered 20 times the level deemed acceptable, developing symptoms of mercury poisoning such as shaking, numbness of limbs, loss of peripheral vision and neurological damage (Earthroots Coalition pamphlet quoting the Toronto Globe and Mail, April 14, 1990).

These accounts resemble many other journalists' and environmentalists' representations of methyl mercury contamination in the James Bay Region in that they depict it: 1) as being manifest in signs and symptoms which are self-evident on the bodies of the Cree residents of Chisasibi; and 2) as being unproblematically caused by the hydro-electric project.[1]

In Chisasibi itself there is an extensive institutional apparatus devoted to research and education about methylmercury contamination in the Cree communities. For example, a sample of umbilical cord blood is taken from every James Bay Cree baby when she is born. Samples of blood and hair are also taken from the mother to be sent for mercury analysis. Every year the Mercury Program sets up a stall in the Chisasibi commercial centre over the course of couple of weeks to take samples of hair for mercury testing. One copy of the results, in the form of a computer-generated bar graph showing individual mercury

levels for each year since the inception of the Mercury Program, is mailed to every person tested. Another copy is reviewed by the clinic doctors, then placed in the person's medical chart. Around the community, posters and leaflets carry prominent warnings about methylmercury contamination, and depict it graphically as flecks of black stuff settling in the kidneys, brains, and spinal cords of an adult Cree couple (See Attachment 1, p.2). A video titled 'Symbol of Life' has also been prepared under the auspices of the Mercury Committee and distributed to all of the Cree communities to explain the mercury problem.

Despite the institutionalized prominence of methylmercury contamination in the community, while working intermittently as a doctor in the outpatient department of the Chisasibi Hospital over a period of 3 years, I did not encounter a single case of mercury poisoning; nor was it once raised as a concern by patients presenting to the clinic with undiagnosed signs or symptoms. On my arrival in Chisasibi, I asked another doctor who had been working full-time in Chisasibi for 2 years previously about the mercury problem. He told me:

> We get the results [of the routine blood and hair tests for methyl mercury] and you end up signing them off. I heard about the Mercury Programme long before coming and I guess when I was first coming, you perceive it as sort of a major health problem, but the fact is that because there is such a well-organized program, it ends up sort of running on automatic power. Preventively, I think that the poster outside has got everybody avoiding mercury-containing fish. Virtually the only contact we have with it now is every few months when you get the results from the Provincial Lab and you just sign them off. Even the follow-up is essentially done automatically. I was told 'Don't worry about it. The Mercury Programme people will take care of it.' You know we screen people. I'm aware that we screen the pregnant women in each pregnancy. But beyond being aware of it and knowing that it's running, that's about the only contact that I've had with it...I think it's great to have that kind of program. I mean to me it's fairly complicated and I was thinking that when I was coming up to James Bay, I was thinking that I would have to sit and read about mercury toxicity because I was going to be seeing it every second day. Well Thank God I didn't have to because eventually I looked at it and it's complicated stuff. I don't understand it. It's very vague neurological symptoms that can't be differentiated from anything else, so it's good that there's a programme that brings it out of your hair. (Dr. A., Interview, June 1991)

When I talked to the Cree trappers and their wives, the people who are, by all accounts, the most directly affected by the mercury problem, several described one man who was rumoured to have had high mercury levels at one time or another. However, no one knew of anyone having been physically affected by mercury poisoning. Nobody I interviewed felt that he/she had been personally affected by sickness caused by mercury poisoning.[2]

What I did find in my research was a complex variety of narratives about changes in the community, in the water, and in the wildlife. There was also much speculation about the relationship of methyl mercury contamination to personal observations of other events and changes in the community and in the surrounding bush. One man told me, for example, about dead caribou he had found that had been killed by mercury ingested while swimming across a river, others about how it spread through water dripping from the hydro-lines.

Some of the narratives were coloured by considerable anger addressed at me as a mercury researcher, as a doctor, and as a white man. Above all, I had an impression of widespread uncertainty concerning what to believe, and how in the end to make sense of the mercury problem in order to decide how to live. As one trapper told me:

> Even though I'm not eating too much fish, I've still got a level of 19.3 The people, you know, they're telling different stories about mercury. It's not all the same information. (August 1991)

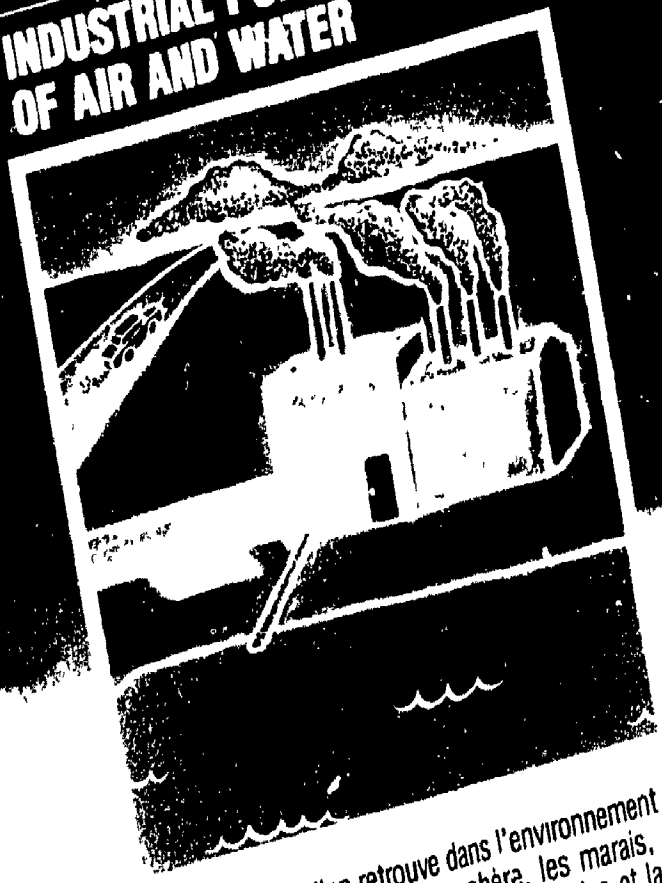
There is, then, a mystery: this problem of knowing what to make of the many stories about mercury.

Attachment 1: Mercury Pamphlet

MERCURE
MERCURY

POLLUTION INDUSTRIELLE DE L'AIR ET DE L'EAU

INDUSTRIAL POLLUTION OF AIR AND WATER

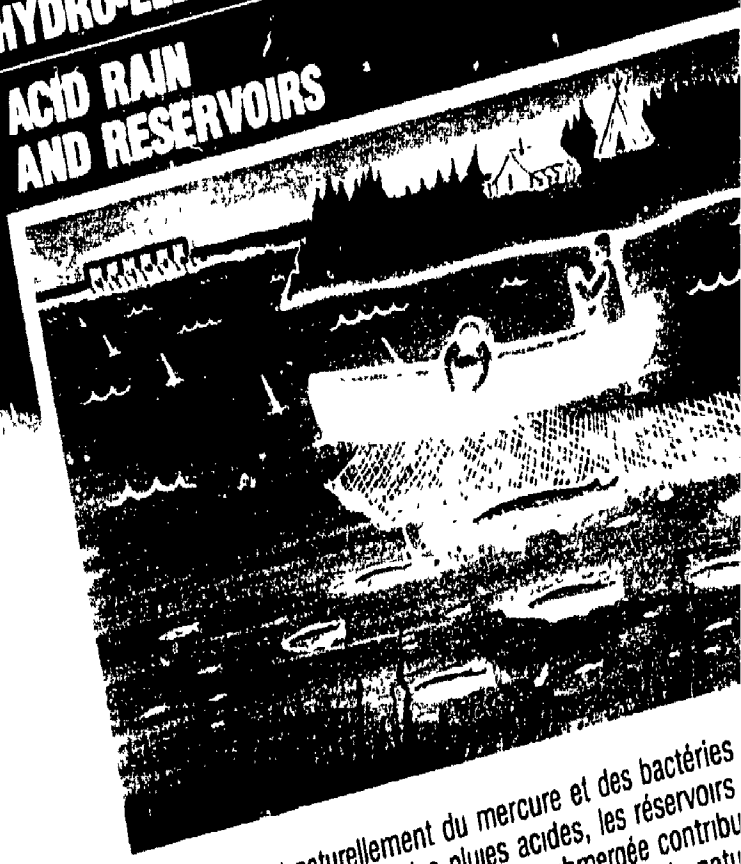


Le mercure que l'on retrouve dans l'environnement prend sa source dans l'atmosphère, les marais, les formations rocheuses, les pluies acides et la pollution industrielle globale. Ce mercure se présente sous une forme que les poissons et les humains ne peuvent assimiler facilement

Mercury found in the environment comes from atmosphere, swamps, rocks, acid rain and industrial pollution from all over the world. This mercury is not in a form that can be absorbed by fish or humans

PLUIES ACIDES ET BASSINS HYDRO-ÉLECTRIQUES

ACID RAIN AND RESERVOIRS



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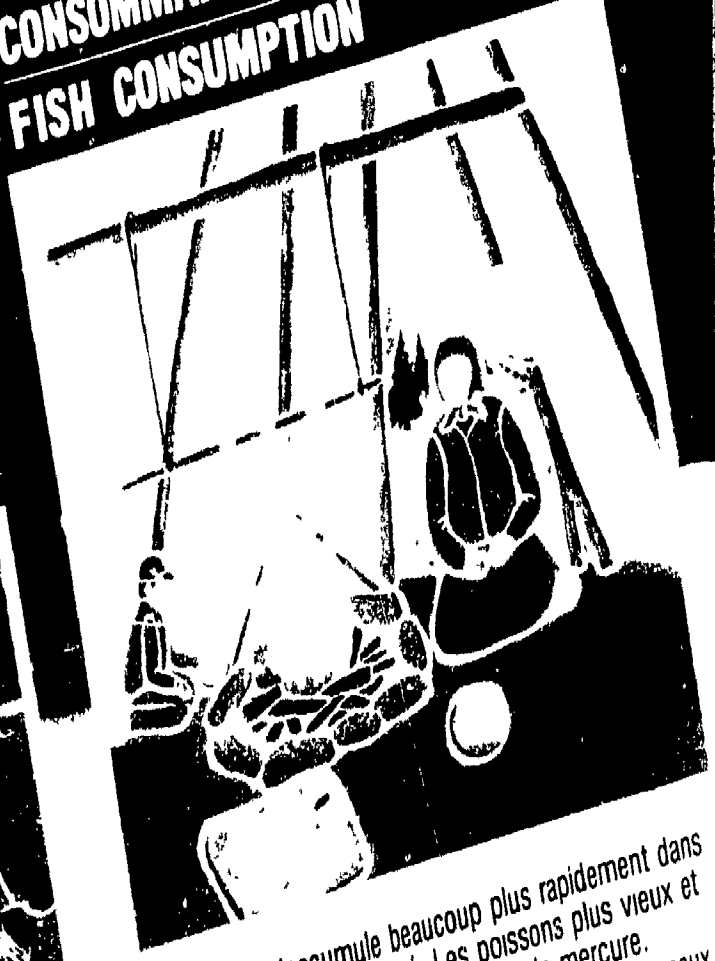
Mercury and bacteria are naturally present in the wat as acid rain and reservoirs with decomposition of fl will contribute to increase the bacterial activity in th mercury into a form that can be readily absorbed mercury is then taken up by the plankton on which feed on insects which in turn are eaten by bigger

CONSOMMA… FISH CONSUMPTION



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Le mercure s'accumule beaucoup plus rapidement dans le poisson qu'il est éliminé Les poissons plus vieux et les plus gros contiendront donc plus de mercure. Consommer des poissons prédateurs, c'est-à-dire ceux qui se nourrissent d'autres poissons, (brochet, doré, touladi, lotte) nous expose encore plus au mercure

Mercury accumulates in the fish more rapidly than it is eliminated. Older fish and larger fish will therefore contain more mercury People eating fish that eat other fish, the so called predatory fish (pike, walleye, lake trout, burbot) are thus exposed to mercury

LE MERCURE DANS LE … MERCURY IN THE BODY

Une fois absorbé le mercure est transporte par le sang; il s foie, les reins et se dépose à la racine des cheveux Une ac le cerveau doit absolument être évitée car elle mettrait grav Durant la grossesse, le bébé se nourrit de la mère par le de mercure, le bébe aussi sera exposé à un taux de mer

Once absorbed in the human body, mercury goes into t liver, kidneys and deposits at the roots of the hair Accur brain is surely a condition to avoid because of the cor pregnancy, the baby feeds from the mother through th high exposure to mercury will also expose the baby t

Pour plus de détails, n'hésitez pas à contacter la rep

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ILLUSTRATIONS BY SHEILA ORR

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PLUIES ACIDES ET BASSINS HYDRO-ÉLECTRIQUES

ACID RAIN AND RESERVOIRS

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Mercury and bacteria are naturally present in the wate Some factors such as acid rain and reservoirs with decomposition of flor ed vegetation will contribute to increase the bacterial activity in the ater, changing the mercury into a form that can be readily absorbed C e changed, the mercury is then taken up by the plankton on which ects feed Small fish feed on insects which in turn are eaten by bigger fi , and then humans

CONSOMMATION DU POISSON

FISH CONSUMPTION

Le mercure s'accumule beaucoup plus rapidement dans le poisson qu'il est éliminé. Les poissons plus vieux et les plus gros contiendront donc plus de mercure. Consommer des poissons prédateurs, c'est-à-dire ceux qui se nourrissent d'autres poissons, (brochet, doré, touladi, lotte) nous expose encore plus au mercure

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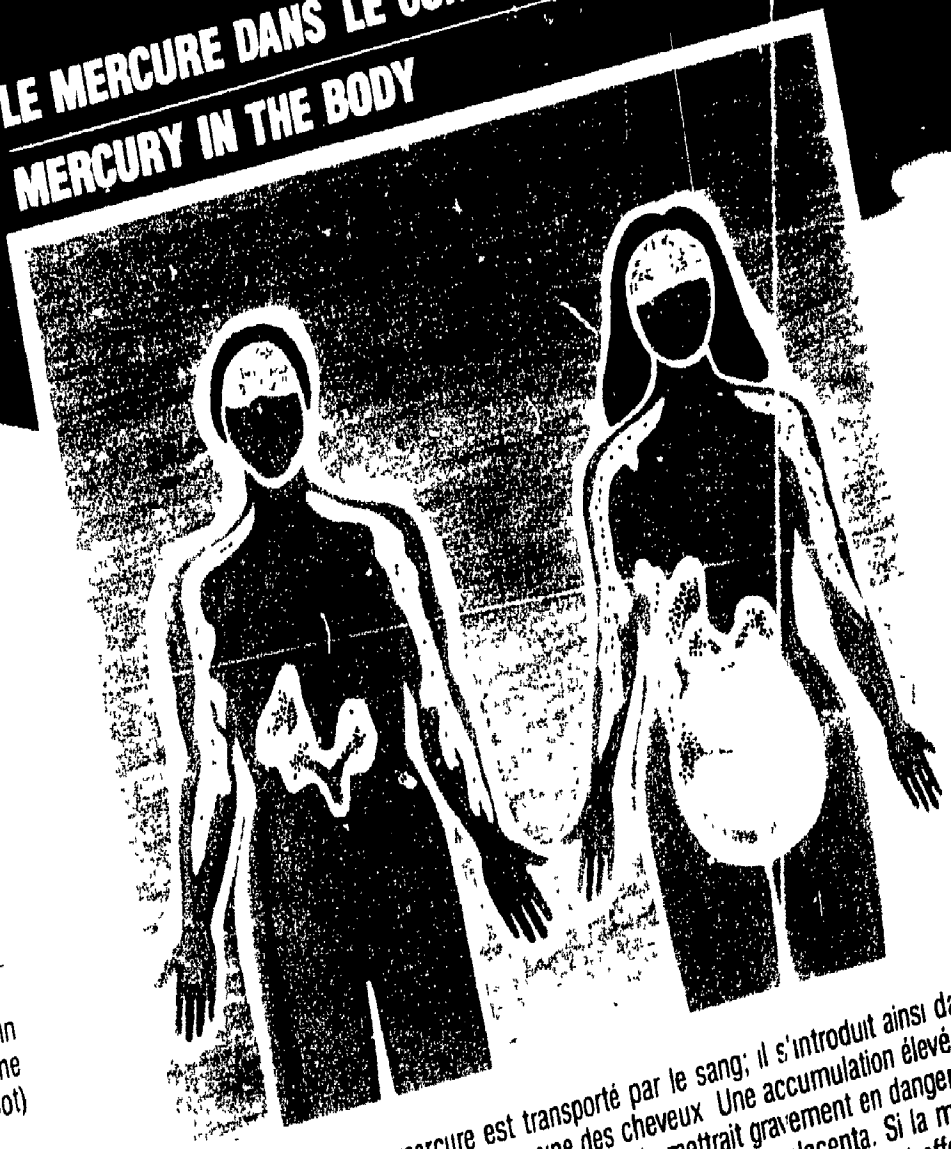
ILLUSTRATIONS BY SHEILA ORR

LE MERCURE DANS LE CORPS HUMAIN
MERCURY IN THE BODY



Conseil Cri de la santé et des services sociaux de la Baie James

Cree Board of Health and Social Services of James Bay

Chisasibi, Baie James / James Bay, Nouveau-Québec / New Quebec
J0M 1E0
Tel.: (819) 855-2844

Une fois absorbé le mercure est transporté par le sang; il s'introduit ainsi dans le cerveau, le foie, les reins et se dépose à la racine des cheveux. Une accumulation élevée de mercure dans le cerveau doit absolument être évitée car elle mettrait gravement en danger la santé des gens. Durant la grossesse, le bébé se nourrit de la mère par le placenta. Si la mère a un taux élevé de mercure, le bébé aussi sera exposé à un taux de mercure pouvant affecter sa santé.

Once absorbed in the human body, mercury goes into the blood stream and gets in the brain, liver, kidneys and deposits at the roots of the hair. Accumulation of a high level of mercury in the brain is surely a condition to avoid because of the consequences to people's health. During pregnancy, the baby feeds from the mother through the placenta. Therefore a mother with a high exposure to mercury will also expose the baby to a high level of mercury.

Pour plus de détails, n'hésitez pas à contacter la représentante en santé communautaire de votre communauté.

For further information, please contact the Community Health Representative in your community.

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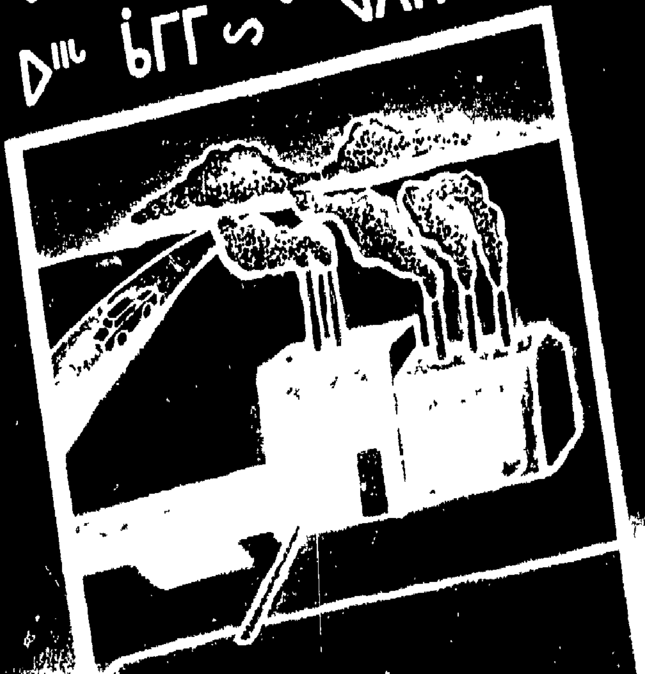

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ILLUSTRATIONS BY SHEILA ORR

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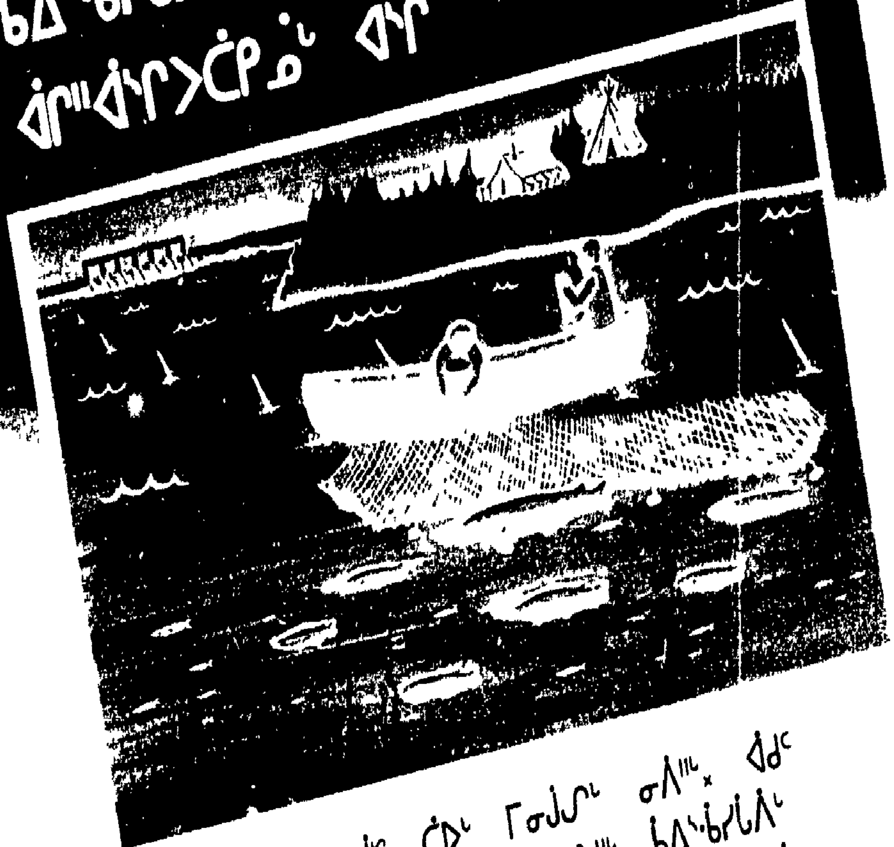

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ᑯᑎᐠ ᓂᒫᐢ: ᒋᓇᐢᑯ, ᐅᑳᐤ, ᑯᑭᒫᐤ, ᑮᔮ
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ILLUSTRATIONS BY SHEILA ORR

ᐲᐦᒌᔫ ᐋᐃᐦᑎᑯᐦᐨ ᓂᒫᐢ ᐋᐦᑯᓰᓐ

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ᐋᑎᒪᐅᒥᐦᐅᒥᑭᓈᒡ ᐊᓐᑖ ᐋᐅᐦᒋᓂᐦᒑᐅᒥᓈᒡ ᐅᐢᑎᐧᑲᓂᐲᐧᐄ᙮ ᒑᐧᐃ
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ᐊᑎᑐ ᐧᐋᒋᐢᒑᐃᑎᒫᐧᑳ ᒑᐧᑳᓐ, ᐊᓐ ᐃᔫᐱᑎᔫᐢᑎᐤ ᓂᑐᐦᑯᔦᓐ ᐋᐱᑎᓯᐅᓂᔫ ᐊᓐᑖ ᐋᐃᐦᒑᔫᒄ ᐋᐅᒄ ᒑᔦᒥᐦᐊᒄ᙮

Part B: Theoretical Framework

> "How then can we say what we mean, when we do not understand the meaning of the words we say?"
> -Rodney Needham, Belief, Language and Experience (1972: 234).

Methylmercury is materialized as a distinctive and always problematic object of knowledge for different groups of persons. In the following pages, I am going to try to explain what may at first seem puzzling: how it is that urban Canadians who watch television and read newspapers come to imagine residents of Chisasibi as suffering from the shakiness, numb limbs, and loss of peripheral vision caused by what they call "mercury poisoning", whereas the people in Chisasibi speak of no one bearing signs or symptoms of the condition which they call in Cree neemasakusoon or "fish sickness"?

Problems of Knowing

The first point I want to stress is that I am **not** claiming to describe anything like sets of beliefs, perceptions, or cognitive structures related to mercury. There are many theoretical reasons for this. Some grow out of a well-established critique of structuralist approaches to studying medical knowledge (see, e.g. Young 1981a). Others stem from my rejection of essentialist theories of meaning in favour of the more holistic views of language promoted among philosophers by Quine (1960) and Putnam (1988: 8), and now well on their way to being established as conventional wisdom in linguistics (Lakoff 1987) and the philosophy and sociology of science (e.g. Hesse 1974; Barnes 1977). Of particular relevance to my thesis is Needham's extensive argument that the concept of "belief" as used in many anthropological accounts glosses over the intentional relationship of a speaker to the beliefs attributed to her (Needham 1972). In practical terms, since many of the people I talked with about mercury told me they did not themselves know what to believe about mercury, it is difficult for me to claim to know for them.

Nonetheless, even if I accept that intentional commitment or belief about knowledge is a problem, not just for me but for my informants, I can still attempt to describe how knowledge about mercury has been produced so as to pose particular groups of people with particular practical and moral problems of knowing. By thus putting aside the problem of intentionality posed by the concept of belief, I can treat knowledge as a broad category which includes aspects of a wide variety of inscribed practices and experiences, including, for example, utterances, narratives, texts, numbers, equations and studies.

I intend to describe how mercury has come to pose distinctive problems of knowledge for various classes[4] of people who have had to deal with it. Part of this account will include an historical examination of a changing division of labour with respect to the production of knowledge about mercury, one in which new domains of knowledge are created -political, juridical, anthropological, or medical, for example - which pose their own problems of interpretation for particular social classes. That is, I will try to explain how making sense of mercury means different things for different classes of people. I want to stress that these class differences are dynamic. For example, a class of mercury researchers takes shape as mercury comes to be formulated as an object of knowledge. Other classes in Chisasibi, such as the Cree Trappers[5], and an emerging bureaucratic class, have developed in association with a whole body of changes which have accompanied the construction of the James Bay Hydro-Electric Project in a context of confrontation. My overall intention is to try to understand how various classes of people have come to be differently interpellated with respect to the problem of knowing about mercury in a shifting field of contested rights and responsibilities.

Mercury and the Moral Order

My emphasis on the necessity of understanding the articulation of sickness within a shifting moral order derives from one which has long been a central concern in anthropological analyses of medical problems. "Moral condemnation," suggested Evans-Pritchard in his analysis of Azande witchcraft, "is predetermined, because when a man suffers a misfortune he meditates upon his grievance and ponders in his mind who among his neighbours has shown him unmerited hostility or who bears unjustly a grudge against him" (Evans-Pritchard 1937: 109). Gluckman elaborated on the relation between sickness and the moral order in comparing social responses to sickness in African societies with moral crises in Britain. He defined moral crises as "the crises that arise in situations where a person is moved by different social rules and values to opposed courses of action, so that no clear solution is available" (Gluckman 1972: 25).

In developing the implications of this line of inquiry for anthropological perspectives on medical problems, Young has developed an operational model of sickness as an episode of contested knowledge production:

> Sickness episodes (particularly episodes that incorporate serious-acute ailments) tend to proceed in a contest-like way. The social object of these episodes is to exculpate the curer's client by transferring the accountability for his deviant behaviour onto some other person or object. A sickness episode begins when the principal and/or his relatives decide the range of symptoms into which his signs **could** be translated. Next, they must

> obtain the services of someone whose medical powers are appropriate to this range of symptoms; under certain circumstances, they may have power enough themselves to translate the signs. Their choice of diagnostician is in a way equivalent to choosing a specific kind of contest out of a repertoire of possible contests, since the diagnostician decides what set of rules will be played, what individuals (including therapists and pathogenic agents) and audiences can be mobilized, and what sorts of social stakes will be involved. The therapist's task is to communicate and legitimize the episode's outcome, and this, too, takes place according to rules shared by sick persons, healers, and audiences. (Young 1976 ; p. 16)[6]

We have then a model in which the ascription of meaning to sickness occurs in a contested and shifting field of rights and responsibilities. As Young suggests, this contestation may be seen as beginning at the level of signs, where the question may be asked: what kind of sign can be taken as bearing a particular practical or moral significance in relation to a designated social field? For example, is a fine shaking of the hands to be considered a significant tremor, and if so, is it to be diagnosed as a benign condition of unknown cause amenable to symptomatic treatment, or is it to be interpreted as a consequence of witchcraft calling for compensation or counter-witchcraft? Even at this early stage of definition, there is no logical limit to the possible range of interpretations. The range of possibilities for contestation and interpretation widens exponentially as each new element is added to any explanatory narrative. In Canadian society, for example, what starts with a little shaking might conceivably end up being translated into any of a number of symptoms, diseases, syndromes, anomalies, deviations, disorders, handicaps, sins, torts, crimes, headlines, compensation packages or research grants depending on what other signs, symptoms or events go along with it, and on the process by which it is interpreted. Each such interpretive process carries with it its own distinct set of moral and/or practical implications; and the tension between various moral and practical significances is one of the central aspects of contestation at any level of interpretation.

This tension between moral and practical significances calls for further elaboration. The problem of moral responsibility first enters into consideration in a sickness episode where possible causes become candidates for the allocation of personal responsibility, either through the metonymic association of a causal agent with a person, or through the attribution of personal qualities to a causal agent. The question of responsibility becomes increasingly complex as persons associated with the sickness episode claim particular responsibilities and rights of interpretation. It becomes more complex still when questions of responsibility, mediated by religious or political ideology, enter into the relationships between individual and social bodies. The number and complexity of moral questions raised by sickness episodes are limited only by the number and complexity of the

interpretations attached to them and by the complexity of social organization engaged in the production of knowledge about such episodes.

A corollary of this account is that any division of labour centred on sickness episodes also entails a division of moral labour. Lest this seem too tidy a point, it is necessary to point out that the anthropological account of sickness as a form of contested knowledge doesn't sit too easily with a categorical Kantian distinction between moral and practical knowledge: namely that only the former has obligatory implications. The problems with this distinction in the context of a model which sees knowledge about sickness as contested are that: 1) a particular account obliges different participants in the contest to different courses of action depending on their roles and 2) the implications of a particular account or form of knowledge are themselves subject to contestation. Durkheim, for example, recognized this when he suggested that "... the moral order is not isolated. It is tied to experience. One can move without interruption from ordinary practical rules to moral rules" (quoted in Lukes 1973: 413). Whether a particular instance of knowledge be considered moral or practical depends on the social position of an observer, and on the way the **problem** of his intentional relationship to the knowledge in question comes to be resolved.

This point is important. If I am to give an account of how mercury is materialized as a problematic object of knowledge for different groups of people, the question of how the problem of intentionality is or is not resolved in each instance hinges on the notion of obligation; that is, if the problem of intentionality with respect to knowledge about mercury is not amenable to **logical** resolution, what is it that eventually obliges or fails to oblige particular resolutions of the problem? The answer to this question has practical, moral, and social implications which I will explore further in the body and conclusions of the thesis.

The Production of Knowledge and its Problems

I have suggested that any attempt at examining knowledge about mercury in relation to Chisasibi by trying to describe beliefs about mercury is inherently problematic. I have also adopted Young's (1981b) view that a possible solution to the problem of writing an adequate anthropological account of such knowledge includes an emphasis on critically examining the production of medical knowledge. That is, though it may be difficult to provide an adequate description of beliefs, it does seem possible to describe such featurese as social organization, techniques and tools of knowledge production in relatively clear terms. When knowledge production entails a relatively complex division of labour, knowledge is regularly materialized in routinized practices or inscriptions so that those engaged in the process can communicate with each other. By this I mean such things as

Latour and Woolgar (1986) call 'reified statements': graphs, pamphlets, studies, briefs, even organograms representing the allocation of responsibility. As long as there are plenty of these to describe, one feels it is possible to gain an understanding of what is happening without having to speculate too much about what goes on inside people's heads and hearts. An understanding of the kind of resources people can draw on to create knowledge, and of the social organization of knowledge production implies a particular set of intentional problems with respect to the knowledge product at various points along the way. To some extent, the social organization of producing knowledge implies what kind of cognitive processes are possible.

What then of knowledge production in the absence of such a specialized division of labour? If, in Chisasibi, my informants are kind enough to produce utterances about mercury for me in the course of interviews, and if those utterances diverge substantially from the official 'facts' available to the community in the form of pamphlets, procedures and exhortations, what am I to make of the processes which have lead to this divergence? In particular, what am I to make of accounts which are inconsistent or self-contradictory? I seem to be led unavoidably into "the distance between cognitive structures and spoken statements", the zone which Young has characterized as having been treated by medical anthropologists generally as "a kind of mental no man's land" to be plastered over with simplistic assumptions about rationality and meaning (Young 1981a: 322).

I appear to have several options. First, I can do as Young suggests and critically examine these assumptions about 'rational' cognitive processes: first and foremost, that people generally reason syllogistically from monothetic category to monothetic category. Young's alternative is to replace this with an increasingly prevalent view in anthropology and linguistics which sees categories in common use as consisting of fuzzily bounded radial complexes, with membership to a given complex being determined by a family of resemblances to a central prototype rather than by a finite set of essential characteristics.[7] Young (1981a: 330) suggests that this revised conception of categorization as a complex of associated features goes along with a model of common reasoning as being **transductive** (moving from particular prototype or complex to particular experiential referent) rather than **inductive** (from particular experience to general category) or **deductive** (from general category to particular experience).

The implication of this model for looking at the production of knowledge about mercury in everyday life, is that, rather than looking for internally consistent propositional explanatory models, I would do better to ask myself: 1) in what kinds of practices (e.g. narration, fishing, or the collection of hair) knowledge about mercury is elaborated; 2) what kinds of prototypes are elaborated (e.g. Minamata disease or abnormalities in fish); and 3)

what kinds of elements (practices, experiences, analogies, narratives, emotions) are used for elaborating these prototypes into more-or-less meaningful complexes.

Implications

Before I move on to describe the structure of the more substantive portions of this thesis, I have to ask what point there might conceivably be in attempting a critical examination of the production of knowledge about mercury. In the first place, I have to admit that this was not how I would have described my project at the time I started my fieldwork: my initial research proposals were phrased in terms of trying to write an "epidemiology of knowledge"[8] of mercury, a label I have since abandoned because it implies that the main determinants of the distribution of such knowledge are ahistorical and law-like rather than contingently embedded in the politics of a given time and place.

I have formulated my approach to understanding the problem of methylmercury contamination partly in response to doubts about the value of mercury research which mercury researchers and members of the community raised early in the course of my fieldwork. Researchers expressed strong concerns about the possibility of their work and recommendations creating more problems than they solved. Many of the people in Chisasibi had even stronger doubts about the appropriateness of research, and some were overtly angry about the mercury research that was being conducted in the community. One of the band councillors I spoke with stated these concerns to me particularly clearly:

> I was one of those who negotiated the Mercury Agreement, along with the LaGrande Agreement in 1986. Since the signing of those agreements, I haven't seen much benefit for the Crees in all of this. I know it's a benefit for all the doctors and the specialists. They can write a book and they get paid and all that. They benefit. But what happens ... people get frustrated, studies and studies upon them. They're beginning to think they're guinea pigs. We know that mercury is incurable, eh? And all that money spent to find ways to cure the mercury. And every summer, every year somebody comes here and they cut a piece of my hair. And that's it. That doesn't do me any good. That's been going on since the signing of the Agreement. And I know the money's being spent writing reports, writing books. My understanding at the time of the negotiation was that the Crees would get the benefit in the meantime while the doctors were trying to find the cure of the mercury. ... They [the members of the Mercury Committee] have no problem authorizing studies. I know ten years from now there will be piles and piles of studies, books about that high [pointing to the roof]. One of them will be your report. There's going to be a million dollars worth of books, worth of studies. In the meantime, maybe you won't find a cure for mercury. (Interview, August 1991)

In one sense, then, a critical examination of the production of knowledge about mercury is the best solution I have been able to come up with in response to the many moral and methodological problems which this project has raised with respect to my own role in producing knowledge about mercury.

From another perspective, a critical look at the way knowledge about mercury is produced is important because of the claim that there is such a thing as an unproblematic "socio-cultural impact" which results from industrial mega-projects and is amenable to technocratic manipulation and control. This assumption is inscribed, for example in the Mercury Agreement (1986), which defines among its objectives:

> [T]he analysis and evaluation of impacts of mercury on the Crees, potential remedial measures to reduce the risk to health of the Crees and other persons in the Territory, ... to minimize the impact on the use of the wildlife resources of the Territory and to alleviate socio-cultural, health, social, environmental, and economic negative impacts upon the Crees and provide for remedial measures. (Mercury Agreement 1986; Sec. 4.1)

The assumption behind the notion of "impacts" is that problems like mercury contamination have essential characteristics which exist prior to and independently of attempts to produce knowledge about them. These problems are, it is presumed in such statements, pre-formed as objects of knowledge, and are consequently amenable to techniques of prediction and control built around a billiard-ball model of causality. One billiard ball -mercury contamination - bounces into others - society, culture, risk and health - all of which are also assumed to pre-exist in forms which are stable and independent of interpretation.

The assumptions which guide this thesis, on the other hand, suggest that none of these things - mercury, society, culture, health, or risk -exist a priori as objects of knowledge, but that all are constantly being produced and reproduced both in research and in the day to day experiences and interpretations of people in Chisasibi. My own experience also suggests that the problems of knowledge which mercury poses for all who have to deal with it are also problems of moral knowledge, by which I mean that their resolution involves necessary choices among second-order principles and values which are partially constitutive of personal and social identities.

In summary, I believe that the language of impacts serves primarily as an ideology which justifies the substitution of technocratic management for more democratic decision-making processes. It takes for granted given structures of power to produce knowledge about the world and hides more than it reveals about the choices which might be made in producing it. I offer this account of the production of knowledge about mercury, then, partly as an alternative to a particular ideology.

Part C: Fieldwork

"See your mercury dealer today."
-Attributed to Chief Billy Diamond, Waskaganish.

Chisasibi

To get to Chisasibi you drive 1500 kilometres north from Montreal, the last 800 of it along a dual-lane asphalt highway built, owned and maintained by Hydro-Québec. Alternately you can fly on one of two daily jet flights into Radisson, a community of about 2,000 people who are all employed by Hydro-Québec or one of its sub-contractors. Radisson is next to LG-2, which is the oldest and largest installation of a complex of hydro-electric dams, reservoirs and turbines known as the La Grande Complex. This Complex stretches from a site 30 miles upstream from Chisasibi, where another community of 500 construction workers has almost completed a newer hydro-electric installation called LG-1, and extends inland about 650 kilometres from Radisson along another company road. The river east of Radisson is a series of dams, turbines and reservoirs known as LG-3, LG-4, La Forge, LA-1, and LA-2.

The project has transformed the river and the landscape. If you ask a Cree resident of Chisasibi where his family hunting territory is, he is likely to describe it by naming the nearest dam. None of the places I have named here - Chisasibi, Radisson, the airport, the highways, LG-1, LG-2 or any of the other dams and reservoirs - existed 20 years ago.

Chisasibi itself is a community of 2800 people located on the east coast of James Bay at the mouth of the Chisasibi River in Northern Québec. Two-thousand five hundred (2500) are listed as beneficiaries under the James Bay and Northern Québec Agreement (henceforth referred to for the sake of brevity as the James Bay Agreement)[9]. Of these, all but fifty are described as being of Cree ethnicity, with the remainder being Inuit. A few whites are married to Cree and Inuit. There is also a relatively transient population of about 300, mainly white, mixed anglophone and francophone Québecois who are employed by the Health Board, the School Board or one of the other governmental or para-governmental bodies that are the major employers in the community.

At least as much as anywhere else in Québec, language is a contentious issue because of the concurrent presence of three levels of government and three sets of nationalist ideologies: Cree, Québecois and Canadian. Most of the Cree and some of the Inuit speak Cree as a first language. Most of the Cree, with the exception of those over sixty years old and those under six, are fluent in English as a second language. All three languages - Cree, English and French - are taught in the local school. Children are taught

in Cree for the first few years of their education, whereafter their parents have the option of placing them in either French or English immersion classes.

Chisasibi is a new town, designed by an urbanization consulting company and occupied only for the last thirteen years. In 1981, over the course of a few weeks, all but a handful of families resettled from the old village of Fort George, located on a sandy island in the middle of the river. The decision to move was made by the band council amidst much controversy over a number of questions related to the effects of the James Bay Hydro-electric Project. Would the changing flow rates erode the island or flood the community? Would it prevent stable ice formation in the winter, thereby making it difficult to travel over the river? Was the island large enough to support a growing community that had been promised adequate housing as part of a compensation package for the construction of the project?

The town is laid out in clusters of ten to twenty houses, an innovation which the planning consultants felt was somehow more culturally appropriate than the straight streets and neighbourhood blocks which characterized the old community of Fort George. There is an asphalt ring road circling the town, off which little shoots leading to the clusters penetrate the centre of the circle. In one or two places they run along the river along the north side of town.

As with all other reserves in Canada, there is no private ownership of land. Most of the houses are owned by the band-council and leased to the families who live in them. Except for a few buildings which were transported from the island, housing consists of several generations of standardized four-to-six bedroom houses. All of the houses have running water and flushable toilets draining to septic tanks and weeping tiles. Because the land is flat and the soil sandy, the weeping tiles do not drain well or sustain a microbial ecology adequate to break down fecal material. Consequently, the sewage is slowly accumulating beneath the soil. (As the local housing engineer puts it: "The houses are beginning to float in their own shit.") The band council is currently lobbying the federal and provincial governments for an agreement to install a piped sewage system.

The town's institutions are laid out along a dog-leg road cutting through its centre. If you start from the north-west end of this road, you pass first the Anglican and Catholic churches, then the Anglican church hall, the police-station, a convenience store, the old arena, the new arena, the school, the Commercial Centre, the day-care centre, and the hospital. The Commercial Centre contains the Northern Store, which is a supermarket and department store owned by a chain which bought all of the Hudson's Bay Company stores in northern Canadian communities within the last decade. Other businesses in the mall include a restaurant, a bank, a hotel, an airline ticketing office, and a hardware store. Band

Council offices, as well as several offices of the Cree Health Board and the Cree Trappers Association, are all located upstairs. Back behind the Commercial Centre there is another large building which looks like a giant tipi, five stories high, attached via a corridor to a more conventional box-like building. It was meant to become a community recreational centre, but has now been boarded up for several years because the Band couldn't afford to finish it.

Becoming a Mercury Dealer

My entry into the world of mercury contamination began, as many thesis topics do, with a grant application deadline and a suggestion from a helpful advisor. I began thinking about doing anthropological research into the mercury problem after hearing that Hydro-Québec had gained inordinate control of the committee overseeing research into the problem of mercury contamination in the hydro-electric reservoirs (see below p.14). There was, I understood, some support within the Cree regional government for the idea of having an independent anthropologist involved in the research. I met with an employee of the Cree Regional Authority and subsequently with a Cree representative to the Mercury Subcommittee on Social Studies to discuss my participation. He agreed that I should present a research proposal to this sub-committee.

Introduction to the Mercury Sub-Committee

The meeting at which I presented the proposal took place in a committee room of the Hydro-Québec offices in Montreal. Present were four employees of Hydro-Québec, among them the sociologist who chaired the meeting, an economist, and two men whose roles I did not understand. The Cree Health Board was represented by a doctor and an administrator. Also present were a couple of consultant anthropologists and a polling specialist engaged in designing a questionnaire to assess the socio-cultural impacts of mercury on the James Bay Cree. It surprised me that there were no Cree present, as it had been repeatedly emphasized to me that one of the functions of the committee was to ensure that the Cree had a voice in the management of the mercury problem.

The meeting was conducted in French. At the top of the agenda was the problem of integrating the administration of a questionnaire designed to examine Cree perceptions of the social, medical, economic, and cultural impacts of the mercury problem with another large study by Santé Québec (a department of the provincial government) which was to evaluate Cree health behaviour and Cree perceptions of health.

The Cree Health Board administrator began the discussion by talking about the Social Impacts Study. He spoke of the importance of using it to get at the impacts of

mercury on the identity and the cultural values of the Cree. Then there was the following exchange:

> **Consultant anthropologist:** "The problem is that the questionnaire is not a sufficient instrument for penetrating these issues."
> **Cree Health Board administrator:** "But there is the question of what this problem does to their fundamental values ... of sharing, of the role of hunters, of the conflict which this generates. _____ _____ [a Cree representative not present at this meeting] has insisted on the importance of examining this question."
> **Hydro-Québec sociologist:** "There are issues we can explore. What about the effects of the food which has to be imported from the south? What about food substitution? What are the consequences of this for the Cree?"
> **Cree Health Board administrator:** "Economic effects ok. Health effects ok. But between these, what is there? ... Our confrères the Cree will say the questionnaire has not touched on what is important. What you are talking about is not cultural."
> **Hydro-Québec sociologist:** "Perhaps it is necessary to include one or two questions on the subject of values."
> **Economist:** "Are we talking about mercury in fish, or about Cree culture in general? How can you trust questionnaire responses? It is necessary to consider the problem of aggression."
> **Consultant anthropologist:** "The problem is that there is so much change. How do you know what is due to mercury?"
> **Cree Health Board administrator:** "My concern is that when we present this to the Cree next week, they will object."
> **Economist:** "I see lots of culture. Culture is everywhere around us. What an argument we are all having about culture. (laughs)"
> **Cree Health Board administrator:** "That's not culture. That's economy."

This was followed by a further discussion of business - problems to do with budgets and deadlines. Then I presented my proposal. It outlined a plan for 'ethnographic research' in Chisasibi, including a round of unstructured interviews with anybody in the community who had anything to do with mercury. I framed the project theoretically in terms of Sperber's notion of "an epidemiology of representations" and spoke of a necessary historical component to the analysis.

As I had been expecting some opposition to my participation in mercury research, I was surprised by how generously the sub-committee received my proposal. The sociologist chairing the meeting expressed some concern that, as 'an ethnographic component' had already been conducted in Chisasibi, and as there was a risk of 'overstudying the population', it would be advisable to try to avoid duplicating research which had already been done. Someone else suggested that, because another ethnographer had stayed with a family of **inland** Cree, perhaps it would be helpful after all to have someone stay with a family of **coastal** Cree. The chairman added that the sub-committee

would be particularly interested in the results of my historical analysis, and might be happy to help with any travelling expenses in this regard.

I subsequently interviewed some of the sub-committee members about their experience of the mercury problem, and eventually submitted a budget for some of my expenses to the consultant anthropologist conducting the sociocultural research. I was asked to attend one other meeting to provide comments on a proposed draft of the questionnaire which was to be administered in all of the James Bay communities. I did so, but had little to offer in the way of constructive advice. Contrary to my expectations, the sub-committee remained always supportive of my ethnographic research.

Going to Chisasibi

In all to date, I have spent a total of only eight months in the James Bay region,[10] seven weeks of it divided among the communities of Great Whale, Eastmain, Waskaganish, Nemaska and Mistassini, and six months in Chisasibi. For only two months of this time was I engaged full-time in 'being an anthropologist'- living in Chisasibi, taking part in various activities, talking informally with people in the community or conducting formal but unstructured interviews. In all, I carried out interviews with 20 "traditional people" - Cree trappers and their wives - usually through one of three people I employed as a translator over the time I spent in Chisasibi; 16 Cree bureaucrats, politicians or health workers; and 12 white bureaucrats, health workers or mercury researchers. The rest of the time I worked as a replacement doctor either in the Outpatients Department of Chisasibi Hospital or running a visiting clinic to one of the nursing stations in the smaller Cree communities along the coast.

I had hoped to find accommodation with a family in Chisasibi for the duration of my stay, but only managed to do so for a total of four weeks. I spent one week boarding with a family on Fort George Island, two weeks with the same family at their house in Chisasibi, and a third with another family at the camp on their hunting territory on the north coast.

Much of the material from which I draw in this thesis is based on documentary sources: published and unpublished historical accounts in Chapter 2, and published and unpublished medical and administrative documents in Chapters 3 and 4. The Cree Regional Authority office in Nemaska provided me with a copy of their Mercury File, as did the Cree Health Board office in Chisasibi. The two principal mercury researchers employed by each of these bodies also responded very generously to my requests for access to their own files having to do with the methylmercury problem.

Chapter 2: The Location of Mercury in a Moral Economy

> So you're not really sure what you're doing and now you're stuck between a rock and a hard place. You're trying to find the mercury problem. Know why you can't find it? It's all politics. It's like looking for a needle in a haystack.
>
> -Cree member of the Mercury Committee, Chisasibi

A conventional scientific account might tell us that, though invisible, tasteless, odourless, and intangible, mercury is everywhere. There is currently no definitive medical account of the significance of mercury in relation to the health of the people of the James Bay region. This has the disturbing implication that, though mercury is everywhere, as far as the problem of health is concerned, it might just as well be nowhere. The mercury researchers I spoke with are explicitly concerned about this possibility.

Terms and Definitions

In this chapter I will describe where mercury is located within a moral economy. In doing so I will make two claims about moral significance that may seem difficult to reconcile: **first**, that it plays a central role in the construction of mercury as an object of scientific and medical inquiry, and **second**, that it is not unitary, but subject to contestation, negotiation and transaction.

In order to make these two claims compatible I have to adopt a notion of morality which allows for the contestation of particular aspects of morality within the boundaries of a set of defining characteristics. One way to do this is to recognize that moral agency, and hence morality, are ways in which people know themselves as persons. Morality is in this sense universally constitutive of personal identity. However, the particular forms which personal morality takes always emerge in the context of historically contingent local moralities (c.f. Taylor 1985: 103; Hampshire 1989: 26; Carrithers et al 1985).

Such a notion is implicit in much anthropological writing on the subject. Goodenough (1965) made such a scheme explicit in his formalist model of the cultural organization of social relationships. Here, local moralities are conceptualized as constellations of **privileges**, **rights** and **obligations** that provide standards of behaviour which mediate relations between members of a given community. Though I will not use his scheme in the formalist way he advocates for tabulating cultural 'data', the terms he describes are nonetheless the ones I will adopt for the discussion of morality and moral economy that follows.

Rights and obligations "serve to define boundaries within which the parties to social relationships are expected to confine their behaviour" (Goodenough 1965: 3). Although

rights and obligations are not uniformly distributed within a given society, the rights of A regarding B (i.e. what A can legitimately, rightfully or reasonably expect from B) imply or entail B's obligations to A. Rights and obligations are simultaneously **codes** (what people say or know about themselves and real and fictive others) and **claims** (demands made in practice). Moral codes may take the form of tacit social knowledge in which people take certain rights and obligations for granted, and think about their personal identity in such terms. Rights and obligations may be explicitly inscribed in texts (e.g. legal contracts) and in habitual practices (e.g. formalized rites). They may also be **implied** in narratives which contain statements about values, principles, or experiences that are constitutive of a personal or social identity. Examples of this kind of narrative include genealogical statements which identify the speaker with a particular political party, professional or ethnic group, or that identify a collectivity with an origin myth or a particular historical trajectory.

Injured rights and unfulfilled obligations create what I will call, for the sake of my argument, a moral deficit. Once such a moral deficit has been recognized in a given instance, there is a wide range of possibilities for dealing with it. Normative codes may be internalized by members of a community so that their violation gives rise to moral emotions such as guilt, shame, dysphoria, anger, pity or grief (Myers 1979, 1988; Bailey 1983; Rosaldo 1980). Such feelings in turn give members of a society reasons for conforming to particular ethical standards (Young 1990: 65). It is the possibility of such internalization of moral standards, along with a capacity for reflexive self-awareness, which gives rise to the possibility of a public rhetoric in terms of such moral emotions. Self-awareness also creates a persistent tension between what Bailey (1983: 223) calls the "moral self" and the "tactical self". Moral emotions can be deployed successfully in pursuit of a particular end only if they are recognizable to an audience as being "real emotions" or part of the moral self. Conversely, emotions deployed tactically may come to be inscribed and codified in memories or narratives through which people constitute their moral selves.[11]

Compensation is a common, but not necessarily universal mechanism for settling disputes over moral deficits and involves the exchange of an act of restitution for an act of injury or for the omission of an obligation. It is a mechanism which plays an important role in the James Bay Cree economy. Others possible ways of settling moral deficits include various forms of punishment or revenge, and displacement of blame. Deficits may also be forgotten, or perhaps, after a time, forgiven. Myers (1988), for example, describes a situation in which failure to fulfil kinship obligations leads to anger and attempts at mortal injury. Such efforts sometimes persist until the avenging party takes pity on the transgressor and discontinues the assault in recognition of the same kinship ties whose violation constituted the initial breach of the moral order.

A distinction between moral and legalistic norms and sanctions and between moral codes and moral claims is important to the discussions of 'moral community' and 'moral economy' which I will develop in the course of this thesis. For my purposes here, a 'moral community' consists of individuals and collectivities bound to each other by a system of rights and obligations and 'moral economy' refers to a system characterized by: (1) a shared code, (2) a shared social apparatus for mediating, negotiating and settling moral and legal disputes, and (3) a shared "currency" of exchange in terms of which disputes are settled. This currency may include forms in which breaches of the code are recognized, for example in particular kinds of insult, injury or unfulfilled obligation. The currency also includes recognized forms in which restitution can be made, such as money or particular kinds of acts or displays of restitution. In this framework, knowledge claims about methylmercury can be seen as having, in addition to particular **use values** for researchers, physicians, or patients, **exchange values** in terms of a moral economy.

The Commodification of Medical Knowledge

Central to my account of the location of mercury in a moral economy is a concern with a particular form of the commodification of medical knowledge. In writing in terms of commodification, I start with the Appadurai's suggestion (1986) that we think about a commodity as anything intended for exchange, and focus our attention not on the form of the commodity itself, but on the form of its exchange. More specifically, he proposes "that the commodity situation in the social life of any 'thing' be defined as the situation in which its exchangeability ... for some other thing is its socially relevant feature" (13). He further suggests that we examine: (1) how 'things' move in and out of a commodity phase; (2) what standards and criteria, (what he calls **regimes of value**) define the commodity candidacy of things in a particular historical and cultural context and (3) what variety of social arenas exist to link the commodity candidacy of a thing to the commodity phase of its career.

In applying this framework to thinking about knowledge about methylmercury contamination in the James Bay region we can make a number of observations. First, it has in common with many other forms of modern knowledge that it is the product of a relatively complex division of labour. It is not only the 'thing' itself - methylmercury contamination -which moves in and out of a state of exchangeability, but the labour which constitutes it. To some extent then, knowledge about methylmercury contamination is the product of fragmented human labour. Each person engaged in this process may take the ends of her own task for granted, and/or be in no position to question the adequacy of the material and conceptual raw materials available to carry it out. This provides for the

possibility of some dramatic shifts in meaning over the course of translation, as for example, when therapists, journalists or politicians interpret the utterances of epidemiologists to their own particular ends. This complex and fragmented division of labour no doubt accounts for some of the discrepancies between my own initial expectations derived largely from mass media representations of methylmercury contamination, and my experience of the problem i n Chisasibi as a doctor and an anthropologist.

Mercury in a Moral Community

My thesis is that knowledge claims regarding mercury can be seen as situated as one among many kinds of injury in a contested economy of rights and obligations mediating relations between the James Bay Cree communities and Québec and Canada. Confrontation between the Cree and the government of Québec over the James Bay Project has had a number of consequences. The construction of a complex of hydro-electric dams and reservoirs has eroded elements of the pre-existent economy based on hunting, trapping and fishing for subsistence and trade. The James Bay Agreement partially resolved the crisis posed by the confrontation by: (1) entrenching a new régime of rights and obligations which created new currencies of exchange mediating relations between the Cree communities and the states of Québec and Canada, and (2) an act of financial compensation.

At the same time, the establishment of this new régime has transformed and enlarged the regional cash economy and created intersecting market economies. The consequences of this transformation include the evolution of a social class organized around the production of knowledge claims about injuries compensable in relation to the field of rights and obligations specified in the Agreement. This class includes local politicians, health workers and bureaucrats capable of representing the Cree in national and international forums, and a circle of advisors based in Montreal and Ottawa who are expert in the rights and obligations pertaining to injury in legal, environmental, medical and cultural fields. Although disputes are represented widely, for example in journalistic media, national and international tribunals, they are dealt with for the most part in a number of 'technical' committees and subcommittees on which politicians and bureaucrats representing the Cree, Québec, and Hydro-Québec sit together to settle differences of interpretation concerning rights and obligations.

At the level of the Cree communities themselves the James Bay Agreement has led to a change from a society in which class divisions ran along ethnic lines - with white missionaries, traders and government agents acting as 'patrons' to Cree hunting, trapping

and labouring 'clients' (see Paine 1971, 1977) - to one in which class divisions increasingly cut across ethnic boundaries. As Cree have taken up positions within the rapidly growing administrative, political and bureaucratic class, class differences which existed previously between whites and Cree have been reproduced and elaborated within the Cree communities:[12] politicians, bureaucrats, caretakers and consultants on the one hand, and trappers, labourers, unemployed people, patients and clients on the other (cf. La Rusic et al 1979).

The James Bay Cree economy is now predicated on the production of knowledge about injury for compensation. I mean by this not simply that the cash economy of the region is predicated on compensation for the original injury produced by the construction of the first hydro-electric installation, but that it is now sustained by the continuing production and justification of claims about injury in relation to the field of rights and obligations inscribed in the James Bay Agreement. Such claims include the demonstration of continuing injury to the environment, to Cree well-being and to the quality of Cree life. In addition, many of the Cree governmental and para-governmental bodies which are by far the largest employers in the region depend for their budgets on the ability of their administrators to demonstrate the failures of Hydro-Québec and the Québec and Canadian governments to live up to the spirit and the letter of the Agreement. The production of injury and of injured persons and bodies have become processes intrinsic to the economy of the region.

For example, in 1988-89 the operating expenses of the Cree Board of Health and Social Services came to 18.7 million dollars (CBHSS Annual Activity Report 1988-89). When I interviewed one of the hospital administrators, I told him I had the impression that the Health Board was engaged in a constant struggle with the government over its budget. He replied:

> That's not an impression. These are facts. When we hire more doctors and more nurses, the budget goes over, and then we see the increase of the services we have to provide to the population because that is the right of the population. That's it. And that's not new. Go in the South and you have how many establishments in struggle with the government to have enough resources? It's not new. It's been like that for ten years. ... We have something that the south doesn't have -Chapter 14 of the James Bay Agreement. These are our legal battles, so when we need resources, we need resources. We are not supposed to be compared with the South. That is the only business. ... The government has to respect it [Chapter 14] because it is the law. So the government is not respecting the law because it does not provide what is written in this Chapter. And you have many Chapters in the James Bay Agreement. ... So what we need, we need resources to survive, to provide the right services to our population. The only thing that I've said for years, we want just to be standard, just to be like the South. Just to be like that - 5 or 10 million dollars over budget.

> The government has to respect that, because it is their own rules. And at the same time we are a young organization, so for sure, we are in the process of developing.

I will develop the thesis that claims regarding mercury contamination have economic value by presenting an overview of changes in the economy of Chisasibi from approximately 1600 to the present. My aim here is to describe, in broad strokes, a process of change in which a moral community based on a hunting and trapping subsistence economy is transformed over time into one based on the contestation of a field of rights and obligations through which it is tied to overarching political and economic structures. My discussion is organized around two themes. The first deals with changes in the form of social organization and the second with changes in forms of exchange. I divide the period under discussion into three parts: (1) 1600-1870, when the fur trade unquestionably dominated relations between Cree[13] and Euro-Canadians; (2) 1870-1970, a period of some economic diversification; (3) 1970 to present, a time in which the James Bay Hydro-electric Project has come to dominate relations between the James Bay Cree, Québec and Canada. I return in the conclusion of this chapter to consider how methylmercury fits into the broad scope of these changes.

Big River Post to Fort George Post: 1600-1870

Forms of Social Organization

Prior to the arrival of British and French explorers in the James Bay Region and the establishment of the fur trade in the 17th century, the Cree around James Bay had a subsistence economy based mainly on fishing and the pursuit of game. These harvesting activities were organized around small, mobile, multi-family hunting groups which congregated seasonally at places of resource concentration (Tanner 1979:1). Over the subsequent three centuries, the British Hudson's Bay Co. and its occasional Canadian and French rivals established trading posts at the mouths of all of the major rivers draining into James Bay. These included one at the mouth of the Rupert River in 1670, and another at the Eastmain River in 1719. When the Hudson Bay Co. established the Big River Post near the modern day site of Chisasibi[14] in 1784, many of the hunters who had frequented the Eastmain Post began to trade there (Francis & Morantz 1983: 117). Except for a brief period from 1824 to 1838, when the fur-trading post was closed and then reopened as Fort George Post, it has served as the focal point for a changing set of social relations between the Cree and a succession of outside agents and agencies: Hudson's Bay Company

servants and competing traders, Anglican and Catholic missionaries, teachers, Indian agents, health workers, civil servants, tourists, journalists, and anthropologists.

Anthropological and historical debates about changes in Cree social organization related to the fur trade are at once voluminous and inconclusive (see Morantz 1980 and Tanner 1988 for reviews). Only during periods of acute game shortage such as that which prevailed from 1915 to 1940 does social organization seem to have shifted from groups of three or four co-residential families hunting together to smaller 'nuclear' family groups hunting separately (Tanner 1978; Morantz 1983: 125-126). During such periods, families separated in order to subsist on small game such as hare and ptarmigan, and congregated together if caribou were found. Since the forties, hunting group composition continues to vary with seasonal changes in the availability of game.

Similarly, it is not clear to what extent before the 18th century particular kin-based groups claimed the important animal resources of a given geographical area (e.g. beaver) for themselves. However, it seems fair to say that, though the roots of family hunting territories go back at least to the early 1700's, the system of land tenure underwent some change and redefinition over the subsequent three centuries. Morantz (1980) argues that there has been considerable continuity in the structure of this system.

Fort George Post did not give rise to a surrounding community of any size until the end of the 19th century. This is partly because the Hudson's Bay Company actively discouraged settlement for fear of having to take on the support of an indigent population because resources along the coast were frequently inadequate to support the families who hunted there. It passed regulations, for example, forbidding Company servants from marrying without the permission of the Postmaster, and obliged any who did marry to set aside a portion of their income to support the family in case of death or abandonment. Even with such measures, by 1870 the Company had reversed its position on the value of hiring native servants. Whereas, at the beginning of the century the Company officials had embraced a policy of using local labour to man the Posts, they decided that because of the "small colony" of expensive dependents which came with native servants it would be cheaper to look again to Europe to recruit labour (Francis & Morantz 1983: 156).

In spite of the Company's concerns about 'dependents' a more-or-less permanent settlement of 'mixed bloods' and coastal Cree **did** form around the post by 1870. The majority of Cree, however, continued to spend most of the year trapping, hunting, and - increasingly, as the numbers of caribou and beaver dwindled - fishing. Usually families remained on their hunting territories during the winter and returned to Fort George only for the summer. This pattern of residence remained common until as late as the 1960's (Hyman & Hyman 1972).

Forms of Exchange

Trade between the Cree and the Hudson's Bay Company began around 1670 and consisted initially of an exchange of 'presents' - furs for a variety of European trade goods such as ironware, ammunition and guns, and later brandy, tobacco, clothing, and still later, foodstuffs. A 'debt' system developed in the early 1700's (Morantz n.d.: 88), and the Company fixed a guiding 'Standard of Trade' specifying an exchange rate in terms of 'Made Beaver'[15], beaver pelts being characterized in 1715 as its 'Chiefest Commodity' (Francis & Morantz 1983: 48). Under the 'debt' or 'trust' system, the Indians were required to exchange all of their furs for material goods, and could not accumulate a credit balance. Nor did the Cree possess a system of monetary tokens until the end of the 19th century which made it possible for them to accumulate portable wealth, as did, for example, the Kutchin in the northwestern subarctic (See Krech 1985). However, the Company did issue debt to trappers at the beginning of the winter trapping season in the form of necessary supplies and hunters paid off their debts after the breakup of ice in the spring. In the late 1800's foodstuffs such as flour, tea and sugar for use as emergency supplies were added to the currency in which the Company issued debt.

In one sense, then, the Company encouraged debt because it obliged the Indians to return to the Company post to trade the following year (Francis & Morantz 1983: 51). Nonetheless, from the Company's point of view, there was some tension between the meanings of good debt and bad debt. For example, if a hunter had a bad season, the Postmaster sometimes found himself in the position of having to extend debt to the point where it became impossible for a trapper to repay it. Consequently, the Company might be forced to 'forgive' the debt in order to avoid losing the indebted trapper's furs in subsequent years to competing trading posts (Francis & Morantz 1983: 52, 101). The system of exchange was such as to oblige the Indians to become indebted to the Company. However, the Company was constantly engaged in efforts to limit the amount of credit it extended to the Indians and to rationalize the terms of exchange in its favour. Such efforts at rationalization were particularly evident in periods when it held a monopoly over trade, as when it absorbed the Northwest Company in 1821 (Francis & Morantz 1983: 123, 127, 169).[16]

Another tension existed between the meanings of 'debt' and 'relief', particularly apparent in seasons which were poor for both game and fur, and in which starvation was a present danger. At times the Company gave food and other assistance to people who came to the post starving,[17] and in the nineteenth century, to a few widows, orphans and destitute old men. But this was not a common practice. Aid to 'dependents' was generally

meagre, and given in exchange for services such as supplying the post with fish, eggs and berries (Morantz n.d.: 96). Beginning in the early 20th century, the Department of Indian Affairs repaid the Hudson's Bay Company for such relief payments, but it is not clear that the Company always made this distinction known to the Cree (Morantz n.d.: 106).

Another tension was evident in conflict between Company and evangelical interests in the mid-19th century. This manifested itself in the Company's opposition to missionaries' first attempts to establish themselves along the east coast of James Bay. For example, the Postmaster of Rupert House wrote in his journal in 1842 that:

> Every Indian here is settled with, but they seem to hang about to hear the Revd Mr. Barnley, although most of them are destitute of food, and under existing circumstances, I do not like to order them off. Our Goose Casks & Oatmeal Barrels must however suffer in Consequence, and as no fish are caught here at this season of the year, and I imagine I would be censured did I permit them to Starve under the immediate eye of our Pastor (Quoted in Francis & Morantz 1983: 163).

It was not only Company officials who worried about the exchange value of Christian morality. Three years before giving up his mission in Fort George in 1853, an Anglican minister wrote to his Society that, "If I were to induce Indians to settle here they would depend entirely on the Society for grain which would be a most heavy expense" (Francis & Morantz 1983: 162).[18]

Wages were initially limited to the servants of the Company, who were largely European until the 18th century. By this time 'mixed bloods' made up more than half of the Company's full-time employees (Francis & Morantz 1983: 153). During the 19th century, coastal Cree[19] were increasingly employed by the Company as seasonal labourers in a variety of tasks which included whaling, logging, building, gardening, haying, blacksmithing, transporting goods and supplying the Post with salted fish and geese (Francis & Morantz 1983: 137, 154; Morantz n.d.: 94). Initially they were paid per task according to a system of payments which the Company called 'gratuities'. However, by the 1860's, when Cree other than full-time employees began to settle around the post for more than a few days a year, payment had developed into a system of monthly wages paid in 'Made Beaver' equivalents (Morantz n.d.: 94).

Fort George: 1870-1970

Forms of Social Organization

A. Meta-medical institutions

The Anglican mission in 1855 was the first 'outside' institution apart from the fur trade (represented primarily by the Hudson's Bay Company) to entrench itself in Fort George. Apparently it did so within a remarkably short span of time, approximately coincident with the ministry of one man. The Rev. William Walton ministered to the emergent medical and religious needs of the people of Fort George from 1892 to 1924 (Morantz n.d.: 113). He is still credited by some and blamed by some within the community with having been responsible for the elimination of "matuu" (sorcery) (Morantz n.d.: 114).

One of the remarkable things about all of the new institutions which established themselves in Fort George in the late 18th and early 20th centuries is how little differentiated their functions were in spite of their well-differentiated self-designations. Walton, although ostensibly a religious minister, performed tasks that were demonstrably governmental and medical as well as religious. For example, there is some evidence to suggest that he appointed (with the help of the Postmaster and the Indian Affairs agent), a Band Council made up of Administrative Chiefs and Councillors. These officers were required by the federal Indian Act of 1876 to serve as representatives of the Indians in dealings with the federal government (Morantz n.d.: 134; Feit 1985: 35). The Indian Affairs agent began making summer visits to the community after 1920. A servant of the federal government whose duties were primarily administrative, he was generally also a medical doctor who conducted clinics when he came to Fort George. Finally, after Oblate priests came to the community in 1922[20], they assumed a role which, in spite of their best efforts to gain converts from the Anglican church, remained primarily medical, educational, and industrial. (With the establishment of a sawmill, farm, carpentry shop and brickmill the mission eventually became the industrial centre of Fort George). The priests persuaded an order of Grey Nuns to establish a hospital in 1930. This hospital remained the main medical facility for the region until it was eventually taken over by the federal government in the 1960's.

The sudden importance of medical care and medical institutions in the history of Fort George during the last few decades of the 19th century and the first four decades of the 20th century is hard to account for without also taking into account the increased frequency and severity of starvation and disease during this period (Morantz n.d.: 99;

Tanner 1978).[21] Epidemics of infectious disease including whooping cough, influenza, measles, as well as many unidentified viral illnesses struck the James Bay Coast with increasing frequency from the mid-nineteenth century on, as the number of travellers from the south increased. Tuberculosis was also common, and outright starvation became particularly severe with the dwindling of populations of caribou and beaver from 1915 to 1940 (Tanner 1978). The 1930's were particularly hard as the global depression produced a near collapse of the fur trade to add to the problems created by a shortage of game. Cree family incomes during this period fell by factors of 10 to 30, for example, from approximately $1500 to between $30 to $140 in 1933 (Morantz n.d.: 134-137). In spite of relatively high birth rates, the annual number of deaths in Fort George frequently exceeded the number of births throughout the 30's and even into the 40's (Desy 1971)[22]. Although I do not have population figures for Fort George in the 30's, the population fell from 729 in 1940 to 684 in 1950. The number of people who emigrated from the community during the forties was equal to one quarter of the population at the beginning and end of this period, and the number of deaths amounted to one fifth of the total population (Desy 1971).[23]

B. Band Councils

Band councils came to be elected bodies in the 1920's (Morantz n.d.: 133-34). Initially chief and councillors tended to be elders, who relied heavily for information and resources on the Indian agent, the minister, and the Postmaster (La Rusic 1968; Feit 1985: 36). For the most part, by the early 60's the main function of the band council was to act as the recipient for benefits and services allocated by provincial and federal government agencies (Rogers 1963: 25, 27). In the mid-60's, young adults with secondary school education were increasingly elected to council positions. In synchrony with the social justice and civil rights movements across North America, this generation of chiefs and councillors began to formulate active positions regarding federal and provincial government policy (Feit 1985: 35).

C. Technological Change

It is beyond the scope of this thesis to give an account of technological changes which occurred in Fort George in this century, or of the institutional changes which came with them. The effects of such technologies as electricity, radio, motorboats and airplanes would be difficult to overstate. However, although many of these technologies were developed early in the century, Cree in Fort George were not able to afford many of them until relatively recently. For example, although Cree hunters were using airplanes by the

1940's to move their supplies inland, up to the time Fort George was resettled to Chisasibi in 1981, few Cree houses had running water.

Forms of Exchange

Most of the elements of the modern Cree economy were present by 1870: subsistence hunting and trapping, the production of furs for exchange, and wage labour. Many of the changes of the 20th century involved either elaborations on these elements, or shifts in their relative proportions. A fourth kind of economy was also present in an incipient form by 1870, as noted earlier, in the form of the Company's reluctant recognition of an obligation to provide minimal support to people it called 'dependents' - widows, orphans, and the abandoned families of Company servants, as well as to Cree trappers who came to the Post starving. When the Canadian government began to assert its sovereignty over Hudson's Bay lands, it also recognized such an obligation. After an official of the Ontario government visited the region in 1890[24] and complained that the Cree were paying exorbitant import duties for goods from England but received neither "public works, postal services, schools, medical attendance, nor in any other form or way calculated to advance their comfort or welfare" the federal government began to distribute Sickness and Destitution (S & D) rations through the offices of the fur traders (Morantz n.d.: 103). The rations consisted of food, twine (for making fishing nets and snares) and gunshot to assist those in danger of starvation. Government officials subsequently enjoined traders to keep the rations to the minimum necessary for survival.

S & D rations were supplanted after World War II by welfare payments administered through the Band Council offices. These were essentially the same as welfare payments across the country and were administered according to **need** determined by means testing criteria. Universal **entitlement** programmes such as family allowance payments (1945), old age pensions (1951), and more recently, unemployment insurance payments, also applied to Fort George when they became available across the country. The distinction between welfare and entitlement programmes is an important one in relation to any society which places a high value on individual productivity or reciprocity. It became particularly important in the eventual design of the Hunters and Trapper's Income Security Programme as part of the James Bay Agreement. La Rusic (1979: 1) points to this distinction in a government newspaper advertisement for Unemployment Insurance. "Welfare is paid only according to need. Unemployment Insurance is paid according to eligibility." The Income Security Programme, La Rusic argues, should be seen as analogous to veterans' programmes, which differ fundamentally from welfare payments in having an element of "quid pro quo."

Fort George to Chisasibi: 1970-1990

The James Bay Agreement: Inscribing a Compensation Economy

As numerous detailed accounts have been written of the confrontation between the Cree and the government of Québec over the James Bay Hydro-Electric Project, I will only provide an outline here of events leading up to the signing of the James Bay Agreement.[25]

In 1971, without any prior consultation with the eight Cree communities in the region, the Premier of Québec announced plans to dam the three major river systems draining into the east coast of James Bay. After a series of community meetings, the Cree petitioned the Superior Court of Québec for an injunction to stop construction of the hydro-electric complex. They claimed that the law passed by the Québec National Assembly to empower the James Bay Development Corporation was unconstitutional because it exceeded provincial jurisdiction and interfered with the rights of the Cree and Inuit to hunt, trap and fish in the region (Malouf 1973: 22). One of the anthropologists involved in preparing the Cree case summed up the court case like this:

> Petitioners and defendants probed every aspect of the social and economic lives of these 6,500 people. ... in essence, the Petitioners in the court case sought to emphasize the importance of the native subsistence economy in all aspects of Cree life and how the James Bay Project would destroy the way of life, while the Defendants tended to focus on the involvement of these people with white cultural patterns such as participation in the normal wage economies of the northern part of Québec, or in the welfare system, to argue that the impact would be minimal. (La Rusic 1979: 3)

In a sense, then, emphasis on the distinctness of a Cree 'way of life' grew out of a particular context of confrontation in which two contradictory modes of production were counterposed. The production of hydro-electric power by the damming and diversion of rivers was counterposed to hunting, trapping and fishing activity along the same rivers.

After a 71 day hearing in which he heard testimony from 167 witnesses - Cree trappers and an array of anthropologists, historians, biologists, engineers and other experts - the Superior Court granted the injunction in favour of the Cree (Malouf 1973). However, Hydro-Quebec appealed the verdict and had the finding temporarily overturned within a week, pending a final decision by the Québec Court of Appeals. The government of Québec expressed its commitment to proceed with the Development whatever the outcome of the appeal. For its part, the Cree prepared to take the case to the Supreme Court of Canada. It was against this background of litigation and uncertainty that the Cree entered into 'negotiations' for a settlement of the conflict.

As Hydro-Québec had already begun construction, negotiations were conducted under an atmosphere of some urgency. This urgency was heightened after the signing of

an 'Agreement in Principle', which imposed a time limit of one year on reaching a final agreement. Consultants involved in the process suggested that this time limit, together with the confrontational context of the negotiations, gave rise to a division of labour in which Cree political leaders were increasingly reliant on their legal and technical experts. The consultants suggested that the leaders were increasingly put in the position of having to make decisions in isolation from the communities they were representing (La Rusic et al 1979: 16).[26] Five Cree negotiators, supported by three lawyers and four other consultants in the fields of engineering, ecology, resource management and social anthropology, divided their time among a main negotiating committee and three technical study groups. With funding provided by the Canadian government, technical subcommittees proliferated to scrutinize and represent every aspect of life in the James Bay region for the purposes of formulating what came to be called "the Cree position" in negotiation (La Rusic et al 1979: 16.).[27]

On the opposite side of each of these subcommittee tables were representatives of various Québec and Canadian government departments, as well as the provincially owned corporations responsible for different aspects of the project: (1) La Société d'Énergie de Baie James (hereafter the Energy Society) for the construction of the Project, (2) La Société de Développement de Baie James (hereafter the Development Society) for developing and exploiting the natural resources of the James Bay region, and (3) Hydro-Québec for managing the hydro-electric complex once construction was complete.

The product of this process of contested negotiation - the **James Bay Agreement** - was a three volume contract signed by the Governments of Québec and Canada, the Energy Society, the Development Society, Hydro-Québec, the Northern Québec Inuit Association and the Grand Council of the Crees (of Québec) (hereafter the Grand Council). Basically, it describes conditions whereby the Cree and Inuit of northern Québec would "cede, release, surrender and convey all their Native claims, rights, titles and interests, whatever they may be, in and to land in the Territory and in Québec" (J.B.A. 2.2) in exchange for a particular set of rights, powers, and obligations. These included government recognition of a set of rights to hunt, trap and fish in most of the territory, $90 million in compensation money, and a degree of self-government.[28]

The Agreement also gave rise to a number of autonomous administrative bodies with "the legal personality which allows them to operate without the trustee relationship with the Grand Council which was necessary prior to that" (La Rusic et al 1979, p.29). These included the Cree Regional Board of Health and Social Services of James Bay (hereafter the Health Board), the Cree School Board, the Income Security Board, Cree Housing Corporation, Cree Arts and Crafts Association, Cree Trappers' Association, Cree

Construction Company, the Cree Regional Authority, and the Board of Compensation, among others.

The Impacts Committee & the Mercury Committee

The corporation called La Société des Travaux de Correction du Complexe La Grande (commonly known by its acronym SOTRAC, but hereafter in this thesis referred to as the Impacts Committee) had four voting directors, two each from the Grand Council and the Energy Society, and one non-voting chairman appointed with the consent of both parties. This was Armand Couture, then vice-president of one of the main engineering companies which built much of the hydro-electric complex (Lavalin), and subsequently president of Hydro-Québec. The committee was charged with planning, evaluating, authorizing, executing and operating 'remedial works', the purpose of which was "primarily to alleviate negative impacts of La Complexe La Grande[29] on hunting, fishing and trapping, and secondarily to provide for enhancement works carried out to offset such negative impacts" (James Bay Agreement 1975: 8-36). In practice, this took the form of development projects of interest either to the Cree or to the Energy Society (for example, the installation of docking and canoe storage facilities at Chisasibi on the one hand, and engineering studies on the La Grande River on the other). The product of negotiations between the Grand Council and the Energy Society, the Impacts Committee was endowed by the Energy Society with $30 million dollars and a lifespan of approximately 10 years (1976-1986). Construction on the La Grande Complex was expected to have finished by the time the Impacts Committee disbanded.

The end of the Impacts Committee in 1986 immediately preceded the signing of two new Agreements which were negotiated together. The La Grande Agreement allowed for the construction of a new turbine 30 miles upstream from Fort George. The capital remaining in the coffers of the Impacts Committee was supplemented by additional Québec and Hydro-Québec funds and rolled over into the Eeyou Corporation which was, like its predecessor, mandated to carry out development projects and remedial works.[30] However, its administration was more directly in the hands of the Cree Regional Authority than the Impacts Committee had been: with the exception of one representative designated by Hydro-Québec, the Cree Regional Authority retained control over appointments to the board of directors.

The second agreement, the Mercury Agreement, provided for the formation of a committee which was modelled after the Impacts Committee, but with six voting members, two each appointed by the Cree Regional Authority and Hydro-Québec, and one each by

the Cree Health Board and the Government of Québec. There was, as with the Impacts Committee, a non-voting chairman who was appointed by the Government of Québec with the consent of the Cree Regional Authority and Hydro-Québec. This was, in fact the same man who had chaired the Impacts Committee.

The mandate of the Mercury Program was also very similar to that of the Impacts Committee, i.e. to "minimize health hazards [of Mercury contamination] and provide for suitable remedial measures to enable the Crees to continue to carry out their harvesting activities and way of life" (Mercury Agreement 1986: 4.3). The Mercury Agreement endowed the Mercury Committee with 18.5 million dollars. As with the funding for the Impacts Committee this was expected to last 10 years.

Lest it seem that I am exaggerating coincidental connections among the Impacts Committee, the La Grande Agreement, and the Mercury Agreement, I will briefly review here the circumstances under which they were created. In 1985, the obligatory surveillance of mercury levels in reservoir fish by Hydro-Québec demonstrated a 4 to 5 fold increase above levels in fish prior to the filling of the reservoir (see Chapter 3, p.32). This was immediately portrayed, not only by the Cree, but also by Hydro-Québec, as a threat to the rights of the Cree under the James Bay Agreement. When Hydro-Québec's Environment Service presented its findings, along with a proposal to engage in a methylmercury research programme jointly with the Cree, the issue of the threat to health was intimately associated with the issue of the threat to the rights of the Cree:

> The James Bay and Northern Québec Agreement, as part of the administrative régime established for the territory, guarantees an exclusive right of use for subsistence of certain renewable biological resources by native people (fish, birds and mammals). Flooding of large areas had the effect of creating fish habitat, and of greatly increasing fish biomass. However, the accumulation of mercury in fish muscle casts doubt on the use of this resource because of the health risks involved in the regular consumption of fish, such as that practised traditionally by native people. For them, fishing is an important element in their traditional way of life. (Hydro-Quebec Environment Service 1986: 2-3)

This document declared Hydro-Québec's interest in producing knowledge about the methylmercury problem in light of the network of rights and obligations contained in the James Bay Agreement. It suggested "that a round table be formed involving Hydro-Québec, [the Energy Society], the Cree Regional Authority, and the [Cree Health Board] for the coordination of studies" (p.7).

At the same time, the Cree government was engaged in a legal struggle to establish its right under the Agreement and under provincial environmental legislation to Cree participation in the environmental review of LG-2A (a particular hydro-electric installation)

and the Sixth Transmission Line. These were aspects of the Project which had not been included in the original Agreement. The Grand Council therefore insisted that the two issues - the mercury problem and compensation for the developments - be settled at the same negotiating table. A letter from the Chief of the Grand Council to Hydro-Québec states:

> ... the question of mercury is very much a part of the negotiations respecting the proposed LG-2A power plant and the sixth transmission line. This question must therefore be discussed, and any joint Hydro-Québec/Cree participation in mercury studies and programs resolved, through the main Negotiating Table established for the purposes of the LG-2A Project and the Sixth Transmission Line. ... Moreover, any main agreement relating to the negotiations on the proposed LG-2A and Sixth Transmission Line projects would have to have a reference to the mercury question. (Letter from the Chief of the Grand Council to the Vice-President of Native and Inuit Affairs, Hydro-Québec, March 17, 1986).

Both the Grand Council and Hydro-Québec were concerned about questions of legal liability having to do with the mercury problem. As one of the consultants to the Cree put it in a memo to the Cree Regional Authority:

> There is no doubt that a MERCURY AGREEMENT will have to be quite "LEGAL" because there are very extensive liability and damage issues involved if the agreement does not bring relief or if the effect of the mercury pollution should prove to be more serious than perceived at this time. (Memo from Terminus Ltd. to Cree Regional Authority, May 26, 1986.)

With respect to accounting for the distribution of knowledge about methylmercury, these connections between the Impacts Committee and the Mercury Committee and between the La Grande Agreement (1986) and the Mercury Agreement (1986) are important because they establish contexts in which methylmercury came to be placed in the same category as all other aspects of hydro-electric development in the region. All become forms of injury requiring compensation.

In Appadurai's terms, these agreements and the committees to which they gave rise constitute spheres of exchange in which knowledge about methylmercury can lead to particular acts of restitution. However, although there was a good deal of money involved, it would be erroneous to call it simply, or even largely, a compensation agreement. The exhange is a complex one, governed by a number of conflicting concerns and interests.

Explicit references to compensation are, in fact, conspicuously absent from the Agreement, except for two clauses in which legal proceedings and liability are mentioned only to assert that the Agreement has nothing to do with them (Sections 14 & 15). The issue of compensation slips in obliquely, however, in the notion of a "remedial measure", which is defined as "any action that reduces the risk to health of the Crees and other

persons in the Territory, reduces the release of mercury into the environment, and/or alleviates the impact of the presence of mercury on the health, socio-cultural, environmental, and traditional harvesting activities of the Crees, including payments to any individual (16.5)." This legal formulation of the Mercury Agreement papers over the role of competing and conflicting interests in constituting the Mercury Committee and ensures that the issue of compensation is subsumed under technocratic imperatives. The Committee thus becomes the site for producing knowledge about methylmercury contamination according to a number of competing imperatives **within** a technocratic framework: (1) a therapeutic imperative to prevent and alleviate suffering, (2) a scientific imperative to produce objective and certain knowledge, and (3) an economic imperative to control and account for the allocation and disbursement of financial resources.

Numbers: Changes in the Cash Economy of Fort George/Chisasibi

When anthropologists working for the Cree inventoried the Fort George economy to prepare for the injunction against the James Bay Project, they described it as consisting of a subsistence hunting sector and a cash sector (Hyman & Hyman 1972: 22; see also Weinstein 1976). This survey estimated that wild game accounted for almost half of the total diet of the community, and for two-thirds of community meat consumption (Hyman & Hyman 1972: 19).

> As far as the cash sector was concerned, the researchers noted that:... [its] most striking feature ... is how little it is based on the natural resources of the area. Virtually every major economic institution is either a service institution organized for the Indians by white Eurocanadians or a white organized and controlled business which absorbs the cash outflow from the other institutions and funnels it back South. Of the 217 Indian people engaged in full-time wage labour, 93% work for these institutions. (Hyman & Hyman 1972: 22)

In 1972 1,289 Cree and Inuit lived in Fort George, and the total cash income of the community totalled $1,543,060. The per capita income was $1,190 (see Appendix B, p.34). The main employers were the schools, the Catholic mission and the hospital, which together generated 38% of Cree and Inuit income. Although approximately one third of the people were supported by welfare during the year, social welfare payments accounted for only about 7% of the total income of the community.

Seventeen years later, the people on the island village of Fort George have been resettled to a new community about 15 miles away on the mainland, now officially renamed Chisasibi. Between 1972 and 1989, there has been a 'baby boom', and the population has doubled to 2,499 people. Total cash income has increased by a factor of 14 (unadjusted for

inflation) to $21,265,764,[31] and the per capita income has increased approximately 9 times, to $10,400. The economic consultants profiling the economy of the James Bay Region for the Cree Grand Council in 1989 noted that "most jobs are in governmental or para-governmental fields" (Hawkins et al 1990: 17), and "40% of Chisasibi's Income is generated by Cree Entities [created by the James Bay Agreement], principally by the Health Board and the hospital" (p. 20). Hawkins et al indicate with concern that only a small amount of income comes from "commercial or industrial endeavour" - only 18% in Chisasibi and 16% in the James Bay Cree region as a whole.

Large numbers of young people will be coming of working age in the next five years. The consultants expect the labour force to increase by almost a third between 1990 and 1994 and they suggest that:

> since the Cree already have a high number of public servants per-capita ... there is little room for any significant increase. Nor can it be expected that many positions will be opening due to attrition or retirement ... since today's public servants are generally young and not slated to retire for a couple of decades (Hawkins et al 1990: 17).

The problem is doubly bleak, they continue, since the other main source of income, the Hunters' and Trappers' Income Security Programme, is also almost saturated. Without new employment opportunities, there will be "vastly expanded welfare rolls of youth in the prime of their productive capacity" (Hawkins et al 1990: 17) and this will likely be accompanied by substantial emigration from the community.

What then is to be done? The consultants suggest that:

> These communities will know that to respond to the serious demographic and economic pressures in the coming years, they will have to insist that both levels of senior government meet the obligations implied in Section 28 of the James Bay and Northern Québec Agreement (Hawkins et al 1990: 21).

Section 28, as it turns out, is entitled Economic and Social Development -Crees, and contains provisions obliging the governments of Canada and Québec to provide programs, funding, and technical assistance of various kinds to promote local industry and commerce.

Fortunately, the consultants are able to point out that there is a bright side to what appears to be an otherwise dark picture. "Potential entrepreneurs" have two things going for them. First, the present work force in the James Bay Region is stable since "the greater part are public servants of one sort or another" (Hawkins et al 1990: 23). Second, the income of this work force is secure since "in 1989 almost 85% of income from local economic activity was derived from governmental or quasi-governmental sources" (Hawkins et al 1990: 23). The report ends with an analogy:

> ... one might say that government investment programs can only provide the Cree with more extensive economic waters to be fished. Prosperity comes from harvesting these waters. The situation today is that the economic rivers and streams are scarcely utilized by the Cree. The spin-off or harvests are being taken to white fishermen downstream (Hawkins et al 1990: 24).

Conclusion

In this chapter, I have described and attempted to place in broad historical context the development of a particular legal code of rights and obligations - the James Bay Agreement. I have done so because this code has come to provide the framework in which all manner of moral conflicts are translated into forms of injury suitable for commodification within historically contingent spheres of exchange.

The government of Québec has proceeded, in the face of local opposition, to dam a river central to the lives of people who live, hunt, trap and fish along it. In so doing, Québec has had to acknowledge the construction of the hydro-electric project as an act of injury requiring compensation. It has also entered into a contract in which the Cree of James Bay surrender particular claims to land and resources in exchange for a new system of rights and obligations binding the Cree to Québec, Hydro-Québec, the Energy Society, and the Development Society. In the absence of rights to alternative 'natural resources' the subsequent economic development of the James Bay region has been predicated on the elaboration of arguments about injury and compensation in relation to these contractual rights and obligations.

In order to understand how knowledge about mercury is produced and distributed, it is not sufficient to think of it in naturalistic terms - that is, as an object existing prior to and independently of its particular social and historical context. Nor can one take for granted that the only problem posed in relation to mercury is the assessment of risk. Knowledge about mercury has been elaborated within a highly politicized context under a given set of social and historical conditions. For contemporary Cree society, the problems posed by mercury include **not only** the evaluation of the threat it poses to health, but also its location as a value in a field of rights and obligations. The significance of mercury in relation to a specific moral economy affects such things as the deployment of resources and the designation of responsibility for particular aspects of knowledge production.

Of the chapters which remain, Chapter three is a historical sketch of the evolution of the problem of methylmercury contamination in relation to Canadian native peoples. It takes particular note of the way moral arguments about methylmercury have been deployed at various points in time. In Chapter four I examine the formulation of methylmercury as an object of biomedical knowledge and examine how its location within a particular contested moral economy has influenced its construction.

Chapter 3: From Grassy Narrows to James Bay: Outline of Methylmercury as a Moral Object

Introduction

This chapter consists of a chronicle of times, people, places and events against which to situate the account of medical knowledge about methylmercury which I develop in the next chapter. I want to show that the construction of methylmercury as a moral object has been an integral part of the process which has led to its elaboration as an object of political, legal, scientific, and medical discourse. In each of these professional realms, the moral significance of mercury is elaborated in different ways.

Minamata Disease

Although mercury has a long genealogy as a toxin, **methyl**mercury poisoning was first described as an industrial occupational hazard in 1940 (Hunter et al 1940). It attained notoriety as an environmental contaminant with its identification as the cause of numerous deaths and severe neurological disease in the Japanese cities of Minamata and Niigata in the late 1950's and early 60's. Altogether 187 people died, and 1419 people were eventually diagnosed with a new syndrome of epidemic methylmercury poisoning. This type of poisoning subsequently came to be known as Minamata Disease. Signs and symptoms associated with this diagnosis included, in order of decreasing frequency:[32]

paraesthesia (disturbance of superficial and deep sensation)
constriction of visual fields
hearing loss
speech disturbances
psychological disturbances
excessive salivation
excessive sweating
dysdiadochokinesia (inability to perform rapid alternating movements)
disordered handwriting
unsteady gait
intention tremor
Rhomberg's sign (inability to stand steadily with feet together and arms at sides)
chorea, ballismus and athetosis (presence of abnormal involuntary movements)
exaggerated deep tendon reflexes
reduced tendon reflexes
presence of pathological reflexes (Kurland et al 1960: 371).

Similarly, prenatal or neonatal exposure to high levels of methylmercury was associated with evidence of profound neurological damage. Such evidence included:

lack of head control
inability to sit or walk
disturbances in chewing, swallowing, speech, gait, coordination and mental development
enhanced tendon reflexes
presence of pathological reflexes
increased muscle tone
involuntary movements
salivation
incontinence (Harada 1977: 218).

In short, Minamata Disease produced signs and symptoms of profound neurological damage in both adults and children. After several years of epidemiological investigation, the cause of the disease was established as methylmercury that had been dumped in large quantities directly into Minamata and Niigata Bays along with waste from vinylchloride factories. Throughout the 1960's the Minamata and Niigata epidemics were widely publicized. In Japan, Europe and North America, Minamata Disease was transformed into a disease emblematic of careless industrialization.[33]

Chlor-alkali Plants & Mercury

Chlor-alkali is an industrial paper bleach, and mercury is one of the main chemicals used in its production. Fifteen chlor-alkali plants were built in Canada in the 1960's during a period of major growth of the pulp and paper industry (Fimreite 1970). The Dryden Chemical Company built one of these plants in northwestern Ontario in 1972. Prior to its closure in 1975, it had discharged about 20,000 pounds of mercury into the English-Wabigoon river system and 10,000-16,000 pounds into the atmosphere.

Domtar Pulp and Paper built another chlor-alkali plant in the southern James Bay region of northwestern Québec in 1967. By 1978, it had released 14,000 pounds of mercury into Lac Quevillon (Remis et al 1977). Government regulating agencies and the industries involved justified these practices despite the problems at Minamata and Niigata on the grounds that the mercury released was **inorganic** mercury (as opposed to methylmercury, which is a form of **organic** mercury), which was considered to be relatively insoluble and biologically inert. The distinction between organic and inorganic mercury later became blurred when Swedish researchers demonstrated that microbial activity in lake and river bottom sediment methylates inorganic mercury, thereby converting it to the more toxic organic mercury (Jensen & Jernelov 1968).

The beginning of the controversy over methylmercury contamination in Canada can be traced to the work of a Norwegian graduate student named Norwald Fimreite. He measured high levels of methylmercury in fish downstream from chlor-alkali plants in industrialized regions of Saskatchewan and southern Ontario (Fimreite 1970). He pointed out that such elevated methylmercury levels were potentially a problem for all of the chlor-alkali plants in Canada.

Grassy Narrows and White Dog, Waswanipi and Matagami

Fimreite was subsequently recruited by the owner of a tourist fish camp on the English-Wabigoon river in northwestern Ontario to test the fish downstream from the Dryden Chemical Company's chlor-alkali plant for methylmercury. He found levels as high as 27 ppm, well above the limit of 0.5 ppm allowable in fish for commercial sale (Fimreite & Reynolds 1973). The Canadian Department of Fisheries then conducted tests for methylmercury in water-bodies downstream from chlor-alkali plants across Canada.

Although levels were high in several cases, it was at two plants in particular that the dumping of mercury eventually gave rise to a controversy of international proportions. In both cases, there were native Indian communities adjacent to the chlor-alkali plant - Ojibwa people in Grassy Narrows and White Dog in northwestern Ontario, and Cree people in Waswanipi and Matagami in northwestern Québec. In both cases, the native communities relied heavily on fish as a source of food and for employment in commercial and tourist fisheries. The situation in northwestern Ontario was more widely publicized, possibly because the Cree in Québec were already at the centre of an even greater controversy over the construction of the James Bay hydro-electric complex. It is important to note that the problem of methylmercury contamination was not then generally accepted as a problem causally related to hydro-electric reservoirs.[34]

Authoritative Translations of Knowledge and the Creation of Injury

The crucial translation which set off the controversies in both Ontario and Québec was the closure of commercial fisheries by the federal government. This was critical because it marked the point at which the potential for injury from methylmercury in Canada was transformed into undisputed **actual** injury. Ever since Fimreite's research had raised the possibility of elevated levels of methylmercury in fish, there had been some speculation about the possibility of the Indians suffering from injury to their **biological** health. However, no one had been able to secure the means to produce authoritative knowledge

about biological injury and speculation remained limited to a small circle of federal bureaucrats, activists, and members of the local communities.[35]

The closure of the commercial fishery was simultaneously a form of injury and an authoritative declaration of danger. The Department of Fisheries had established the allowable level of mercury in commercial fish at 0.5 ppm, and it had done so purportedly to protect public health.[36] Closure of the fishery on the grounds that the level had been exceeded therefore constituted an authoritative declaration of danger to public health. At the same time, fishermen, tour guides and tourist fish camp operators immediately lost their jobs, and the whole region suffered economically.

This translation made it clear that whatever disease methylmercury might cause directly (unmediated by consciousness) on human bodies, it was also capable of inflicting economic and psychological injury. Compensation had therefore to be considered for injury other than **disease** caused by mercury.

The Politicization of Methylmercury Contamination

Following the closure of the commercial fishery, the issue of methylmercury contamination rapidly became politicized around issues concerning the definition of injury, and responsibility for injury and compensation.

Although this process of politicization occurred to some extent in both northwestern Ontario and in northwestern Québec, the journalistic media tended to deal with the issues in the two places in isolation from each other. Of the two, the problem in Ontario came to be the more prominent, although the situations with respect to chlor-alkali plants was similar, as were the levels of methylmercury detected in both fish and humans. The issue may have had a lower profile in Québec partly because it was subsumed there under the wider and more prominent issue of Cree opposition to the James Bay Hydro-Electric Project.[37]

Medical Services Branch of National Health and Welfare, which was responsible for Indian health services,[38] reacted to the possibility of mercury poisoning by bringing nurses and doctors to the native communities adjacent to the chlor-alkali plants to draw blood samples for mercury testing and to conduct physical examinations. Medical Services Branch initiated a nationwide methylmercury surveillance programme in **all** of the Indian reserves across Canada, on the grounds that "the Indian and Inuit people of Canada eat more fish, game and sea mammals than do most other Canadian residents and, therefore, are more exposed to the dangers of certain environmental contaminants than is the general population of Canada" (Wheatley 1979: 13). Several Indians from Ontario and Québec who had the highest levels of methylmercury in their blood were admitted to tertiary care hospitals for neurological testing, as a result of which a medical spokesman for the Medical

Services Branch said in 1974 that "As a matter of fact, Canada has no proven case of organic mercury poisoning from eating fish" (Bernstein 1974: 651).

Strong alliances formed on the side of the fish camp owners and the Indians seeking compensation for methylmercury contamination from the pulp and paper company and the Ontario government. These alliances came to include the Grassy Narrows Band Council, the Anti-Mercury Ojibwa Group (AMOG), the Ojibwa Warriors' Society, the National Indian Brotherhood, the American Indian Movement, several environmental groups, the Quaker Society of Friends in the United States, and the Minamata Patients' Alliance in Japan. The last two in this list were instrumental in bringing diagnosticians to the affected communities as alternatives to those provided by Medical Services Branch. Through the Society of Friends, a Quaker physician was recruited as the first full-time physician to Grassy Narrows. Through the Minamata Patients' Alliance, AMOG made arrangements to bring a task force of Japanese physicians with clinical experience of Minamata Disease to the affected communities in Ontario and Québec. "These data," wrote the Japanese physicians of their clinical examinations of the Grassy Narrows Ojibwa, "indicate that the inhabitants of the regions concerned are polluted by mercury to an extraordinary extent" (Harada et al 1976: 175).

Governments of Ontario, Québec and Canada responded to the crisis by appointing task forces, as well as several parliamentary committees and a royal commission.[39] One of the results of the national attention brought to bear on the communities of Grassy Narrows and White Dog was to draw particular attention to the poverty and poor housing on the reserves. Arguments concerning the effects of methylmercury in Grassy Narrows and White Dog described the problem as the culmination of a long history of injustice which included alienation from the land, impoverishment, economic marginalization, governmental neglect, community resettlement and social disruption. It was frequently argued that it was impossible to take account of the effects of methylmercury without also taking into account its economic, social and cultural effects (see e.g. Iijima 1975, D'itri & D'itri 1977, Shkilnyk 1985). The Federal Task Force, for example, concluded that:

> The most serious consequences of the mercury pollution at this time are economic, social and cultural. As a result, the social health and well-being of both communities is suffering (National Health and Welfare 1973: 17).

Methylmercury as Moral Object

Wherever one looks in the history of methylmercury contamination, moral arguments are being invoked to justify particular interpretations of events and particular courses of action. For example, near the beginning of the controversy over methylmercury

the federal Minister of Fisheries and Forestry declared in a speech to the Canadian Manufacturers' Association that:

> We have caught our mercury problem in time. We have caught it before there is any real danger to human beings. Nothing has escaped the watchful eye of our Federal Fisheries Inspection Service. ... Basically the industry which caused the problem must solve the problem. It must not only improve its housekeeping but make amends for sloppy practices in the past. It must clean up its operations and it must compensate others who have been hurt by its negligence (quoted in Sutherland 1976: 144).

The president of the pulp and paper company took a rather different view of the prevalent distribution of rights, obligations, and responsibility for injury:

> There are many instances in our society where people are harmed in one way or another through no fault of their own, and it's particularly difficult where blame is not exclusive, where there are complicating factors; and since we operate on a principle of law in this country, then you almost have to define it in the courts, split up where is the responsibility, do it on a legal basis and assign the consequences. I don't know exactly what we've done. Nobody has told us what the consequences of our actions were (quoted in Shkilnyk 1985: 190).

A spokesperson for the National Indian Brotherhood[40] stated at a symposium on native health in Manitoba that:

> The situation is grave, so grave that the National Indian Brotherhood cannot look at the mercury project solely in terms of scientific research. For five long years these Indians have been punctured with needles, scalped for mercury samples and subjected to medical examinations. Meanwhile their economies have been destroyed by fishing bans and they have fallen sick. As far as the National Indian Brotherhood is concerned very little has been done to truly alleviate the situation. It is fine for Health and Welfare to insist that more scientific research be done, but the National Indian Brotherhood is forced to take further action through our Mercury Project. ... I would like to emphasize that these are my people that are being destroyed. The National Indian Brotherhood cannot sit idly back and be content with more scientific experimentation. Therefore we insist that:
>
> > 1) every endeavour be made to convince Indians to stop eating mercury contaminated fish. This is not easy considering that the entire Indian way of living has been in unison with the environment;
> > 2) immediate relief in the form of an alternate source of protein be provided free of charge to the Indians;
> > 3) compensation be provided to the Indians for the loss of health and the destruction of their livelihood.
>
> ... The mercury problem in Canada is as much a social as a political problem. It is as much a problem of political inaction, unkept promises and social and economic disruption as it is a scientific problem. The National Indian Brotherhood Mercury Project therefore cannot be solely and strictly a

> scientific project if it is to be relevant to the Indian people. The National Indian Brotherhood insists that the mandate of the mercury project be broad enough to encompass scientific, social and political goals. Political goals will force action and bring compensation for the Indians, and scientific research will build a case for compensation for the Indian people so their social stability will be restored. (Sutherland 1976: 144).

In this last example, mercury as social, political, economic, and legal problems are explicitly counterposed to mercury as a scientific problem. All of these examples can be said to formulate methylmercury as a moral object in that they are: (1) explicitly concerned with the distribution of responsibility with respect to injury derived from methylmercury; and (2) primarily concerned with what **ought** to be done about the problem.

My point in saying that these examples represent mercury as a moral object is not to suggest that there is a categorical distinction which can be drawn between moral representations of mercury and other kinds of representations (as if social, political, legal or scientific formulations did not also entail moral problems). The two features of moral objects I describe here do not begin to exhaust the moral meanings of the statements I have reproduced above. Partly this is because such meanings are not contained **within** texts or utterances. Rather, they are, as Geertz says of sacred symbols, only "stored" there (Geertz 1973: 127). Moral significances **emerge** from relationships between people and representations only in the context of particular frameworks of discriminations of value. Only given such personal and cultural frameworks, is it true that, as Geertz puts it, "the powerfully coercive 'ought' is felt to grow out of a comprehensive factual 'is'" (Geertz 1973: 127).

Because aspects of knowledge are embedded in the context in which an utterance is made, it is not necessary, in making a moral point, for a speaker to refer directly to rights, obligations, or responsibility, nor is it essential for him to make explicit recommendations about what 'ought' to be done. Consider the following newspaper headlines about mercury: "'Yes...seven tons can be dangerous,' says Swedish expert" (The Gazette, Montreal, September 11, 1975: 10) and "James Bay-area mercury pollution believed to be the world's worst" (The Globe and Mail, Wednesday, April 2, 1986). The messages here may have a number of implications, not least among them that the reader should move on to read the article beneath the headline. But given common tacit knowledge about such things as quantity, expertise, and pollution, they also imply that the problem deserves to be taken seriously, whether it comes from a chlor-alkali plant in Waswanipi, as in the first instance, or from a hydro-electric reservoir, as in the second.

Similarly, although the following exchange between two members of the Canadian parliament contains no explicit statements about rights or obligations, and makes no

reference to what ought to be done, it is clear that both question and answer have moral implications:

> [Member of the Opposition] My question is for the minister of the Environment. Can the Minister inform the House whether a definite link has been established between the high levels of mercury in the Indian population and the mercury-contaminated effluent of the Domtar plant at Lebel-sur-Quevillon?
>
> [Minister of the Environment] There has been no such link established, Mr. Speaker. The Indians who were brought to Montreal for observation were not found to have a serious sickness caused by mercury. They had been eating fish from watersheds other than those into which Domtar discharges its effluent (from Hansard, June 18, 1971: 6870, quoted in Larusic et al 1972).

The moral implications of these utterances derive as much from the tacit network of rights and obligations that link the two politicians to each other and to their constituents, as they do from the facts the politicians express. The question from the Member of the Opposition is also a **statement** about the Minister's responsibility for injury to the Indians and a challenge to the minister to show that he is fulfilling his obligations. The Minister's statements of fact about measures taken, diagnoses rendered, and the source of the fish consumed by the Indians are, above all, assertions of obligations fulfilled and injury and responsibility denied.

Political Epidemiology

By 1977, the Japanese and Canadian neurologists who had examined Ojibwa people in northwestern Ontario differed significantly in their opinions regarding the likelihood of methylmercury contamination of the English-Wabigoon river system being responsible for significant disease in humans. Both felt that an epidemiological study was necessary to resolve the question of whether or not methylmercury was having clinically significant effects in northwestern Ontario (Harada et al 1976: 181; Shkilnyk 1985: 196; Wheatley 1979). Although the federal and provincial governments were strongly in favour of such a study, representatives of the Indian bands had other priorities. A number of groups, including the Anti-Mercury Ojibwa Group, the Grassy Narrows Band Council, the National Indian Brotherhood, an organization of fish camp owners, and the Indian Affairs Branch of the federal Department of Indian and Northern Affairs began lobbying the Ontario government to close the English-Wabigoon river system to sports fishing (Shkilnyk 1985: 215-221).

The rationale behind this was that the tourist fishery had been nearly destroyed by publicity about the methylmercury problem following the closure of the commercial fishery. The Ontario government had resorted to promoting sport fishing via a 'Fish for Fun' campaign which encouraged anglers to enjoy the sport for its own sake rather than for the taste of the fish they caught. Under these circumstances, lawyers working for the Indian groups and for the fish camp operators advised their clients that, once the Ontario government had acknowledged damage done to the sports fishery by closing it, as it had done for the commercial fishery, it would be easier to obtain compensation from the governments and the pulp and paper company.

These differing priorities confronted each other at a meeting of the Canada-Ontario Mercury Committee on April 5, 1977. There, National Health and Welfare, in conjunction with the Ontario Ministry of Health, and the Donner Foundation, offered the Band Councils of Grassy Narrows and White Dog $450,000 to conduct an epidemiological study. The chiefs of the two communities took the position that they would accept the study only on the condition that Ontario government close the contaminated river system to sports fishing. When the Ontario government refused to do so the federal government offered the money for the study to the new regional government of the James Bay Cree, which was taking shape in the wake of the James Bay Agreement.

Justification for transferring the study was made on the grounds that, the problems in Ontario and Québec being similar, an epidemiological study of the Cree methylmercury problem would also shed some light on the problem in Grassy Narrows and White Dog. When the Cree Regional Authority accepted the study on behalf of the Cree, the main focus of medical research into methylmercury contamination moved to James Bay.[41] The loss of this study was perceived by the Ojibwa leaders as a major political defeat because it left them without further official acknowledgement of injury to the river, and without further means of producing authoritative knowledge about biological injury to the people of Grassy Narrows and White Dog. Many people in the two communities repudiated the Band Councils' tactics and the chief of Grassy Narrows later described the decision to tie acceptance of the epidemiological study to closure of the sports fishery as "the greatest mistake I ever made when I was chief" (Shkilnyk 1985: 219). He said of this episode:

> We were manipulated. We were taken in and used by people who wanted the river closed for their own reasons. We lost the epidemiological study. After we decided against closing the river, the champions of the Indians disappeared. Now we have nothing. We have to start over (quoted in Shkilnyk 1985: 221).

This point of translation, whereby the focus of the medical problem of knowing about methylmercury shifts from Grassy Narrows to James Bay, illustrates the difficulties inherent in drawing a categorical distinction between the **scientific** and **political** factors (or **instrumental** and **moral** ones) that influence the outcome of public controversies (cf. Rip & Groenewegen 1988). With the transfer of the study to the Cree, the question which had become salient in the public arena, "What is the extent of the methylmercury problem in Grassy Narrows?" becomes "What can we say about the physical effects of methylmercury on the bodies of Canadian aboriginals?" In focusing attention exclusively on the biological aspects of injury, the translation both generalizes and essentializes the inquiry, leaving behind any issues which might have been related to the particular history of either the Cree or Ojibwa communities.

Perhaps the decision to transfer the epidemiological study in the face of Ojibwa demands for compensation constitutes a form of bureaucratic terror in the sense described by Lyotard:

> By terror I mean the efficiency gained by eliminating, or threatening to eliminate, a player from the language game one shares with him. He is silenced or consents, not because he has been refuted, but because his ability to participate has been threatened (there are many ways to prevent someone from playing). The decision makers' arrogance consists in the exercise of terror. It says: "Adopt your aspirations to our ends - or else." (Lyotard 1984: 64)

Settlements

Over the next few years, lawsuits, commissions and committees moved slowly on. In 1985 the Ontario government eventually made restitutional payments of $8.7 million to the two Ojibwa bands (Shkilnyk 1985: 240). The lawsuit against the Dryden Chemical Company was eventually settled out of court.

In James Bay, because of financial negotiations with the Québec government concerning compensation for the James Bay Hydro-Electric Project, the issue of government reparations specifically for mercury contamination from the chlor-alkali plant never became a major issue. The Cree regional government proceeded with lawsuits against Domtar Pulp and Paper which remain unsettled in spite of a large epidemiological study commissioned and paid for by Domtar (Spitzer et al 1988).

The Current Problem: Hydro-Electric Development as A Cause of Mercury Poisoning

In the few years after the hydro-electric reservoirs created as part of the James Bay Project were filled with water, Hydro-Québec described them as a new and rich source of edible fish. The company actively encouraged Cree fishermen to use the reservoirs for fishing, and took the trouble of building launching ramps in order to facilitate fishermen's access to the river. However, in the late 1970's, the results of mandatory testing of fish for sale from an Indian commercial fishery raised the possibility of an association between the flooding of reservoirs and high methylmercury levels in fish (Allan Penn, personal communication). Speculation about a causal connection between methylmercury contamination and hydro-electric reservoirs was thereafter sufficiently strong to bring Hydro-Québec to include the monitoring of methylmercury levels in fish in its Environmental Surveillance Program in James Bay. The results of this programme, released in 1985, demonstrated four-to-five-fold increases in the background levels of methylmercury in reservoir fish (Hydro-Quebec Environment Service 1985).

The problem of dealing with the possibility of mercury toxicity within a field of rights and obligations peculiar to the James Bay economy led to the formation of a Mercury Committee, which was made up of representatives from the Cree regional government and the Energy Society (see Ch. 4, p. 48).

It is now generally accepted by Hydro-Québec and the Cree that reservoirs are one cause of elevated methylmercury contamination in fish. This rise in the levels of methylmercury in fish is accounted for by the accelerated conversion of 'natural' inorganic mercury to methylmercury during microbial breakdown of submerged vegetation. However, it is by no means clear that hydro-electric reservoirs are the only significant source of methylmercury in the James Bay region. It is generally acknowledged in research papers, for example, that high levels of methylmercury can be found in predatory fish throughout Northwestern Québec (Barbeau et al 1976; Penn 1978) and that many of the Cree fishermen who had elevated blood and hair levels of methylmercury consumed fish that were not affected by the reservoirs (Dumont et al 1988).

There is also considerable debate about whether or not this high level of 'background' mercury in the region is really 'natural' or is the product of a century of industrialization farther south. The favoured hypothesis here is that mercury is transported north in the atmosphere and deposited with snowfall (Rahn & McAffrey 1980; Hansen 1981; Wheatley & Wheatley 1988). The problem to which most attention has been directed, however, has to do with the determination of the health effects of methylmercury contamination.

Conclusion

In this chapter I have outlined the historical trajectory of the methylmercury problem in Canada from its elaboration as a toxin produced by pulp and paper plants in 1972 to its identification as a consequence of hydro-electric development in 1986. Throughout this account I have indicated ways in which the production of knowledge about methylmercury as a scientific object has been predicated on the production of moral knowledge about methylmercury. The point I want to stress here is that, although scientists strive to construct knowledge which is **objective** and stripped of moral significances, scientific and moral knowledge are not mutually exclusive **kinds** of knowledge. On the contrary, scientific knowledge is produced according to the dictates of a particular objectifying morality.

This is an issue about which the philosopher Charles Taylor has written extensively (1985; 1988). He argues that scientific activity and modes of thought are associated with a particular moral framework which emerged from the natural science revolution of the 17th century. This naturalistic framework asserts that Man is to be seen as part of Nature and Nature is to be understood and described according to two principle edicts: (1) we must avoid anthropocentric "subjective" properties; and (2) we must give an account of things in absolute terms (Taylor 1985: 2). Scientific researchers work in accordance with a naturalistic framework which valorizes such qualities as objectivity, certainty, and stability.[42] Is it not only natural that what counts as an object of scientific knowledge will be characterized by these qualities?[43]

Moral significances attached to objects within a field of contested rights and obligations, on the other hand, are frequently unstable. This is partly because they are concerned not so much with the way things **are** (this being frequently left to the scientists to define in naturalistic terms), but with the way they **should be**. This of course varies tremendously, depending on one's moral framework. Moral objects motivate action of many kinds - the striking of committees, the launching of research programs and the allocation of resources, to name just a few. But once assembled and put to use they frequently fade from view, leaving behind only traces -forgotten agreements, discarded newspapers, and transcripts of speeches. It is easy to forget that they ever existed, or that the conditions which gave rise to them existed.

In thinking about an object of scientific knowledge such as methylmercury from within a scientific framework of observation, it is tempting to see the naturalistic account as the only valid account, and to see all other accounts as somehow irrational deviations from it. For example in an anthropological account which tries to write local knowledge about fish and mercury as Cree ethnoscience, we find the following statement:

> While scientists have been unable to establish a clear link between the degree of mercury contamination and the appearance and texture of an animal, it appears that popular knowledge insists on recognizing one. In this perspective, mercury is, in reality, probably perceived more as a substitute or grab-bag symbol of a whole range of fish habitat changes with negative impact on its quality and edibility. It appears that mercury represents a way of referring to the quality of the biotic surroundings and hence the quality of the environment. (Lepage 1991: 4).

As in other accounts which try to render other-than-scientific knowledge as ethnoscience, the naturalistic anthropologist, even in trying to be sympathetic to the 'native's point of view', renders local knowledge in naturalistic terms, stripping the utterances from which he infers the knowledge he tries to describe of their personal and moral significance.

If we recognize scientific knowledge as being the product of activity informed, like any other, by a particular moral code, it becomes easier to see the difficulties scientists face in trying to construct methylmercury as a stable object of knowledge, as well as to notice the ways in which such difficulties are resolved. It also becomes easier to note the contradictions which arise between naturalistic and other moralities in the course of efforts to produce scientific knowledge. In the chapter which follows this one, I will attempt to describe some of these difficulties and contradictions in relation to methylmercury, and to examine some of their consequences.

Chapter 4: The Construction of Methylmercury as an Object of Scientific Knowledge

Introduction

In this chapter, I will suggest that the "facts" through which methylmercury is apprehended scientifically are shot through with value-laden terms and concepts. I will also describe ways in which the terms and concepts which constitute mercury as an object of scientific knowledge contribute to the constitution of social identities.

I begin my account by suggesting that naturalistic objectivity is better seen as one kind of morality rather than as a value-free method of description. I argue this point by examining a much-cited epidemiological article which discusses the epidemiologist's problem of knowing how much evidence is enough to impute disease-causing agency to an environmental toxin. I elaborate on the conclusions of this epidemiological paper to suggest that epidemiological facts can be seen as necessarily encrusted with ethical decisions taken in the context of particular relations of power, responsibility and culturally constructed difference that separate knowledge producers from the aspects of the world they produce knowledge about.

In the remainder of the chapter, I trace the development of a number of interconnected concepts which are central to scientific and medical discourses about methylmercury in relation to aboriginal groups in Canada. I describe the way moral concerns arising out of the epidemic at Minamata came to be incorporated into medical accounts about methylmercury contamination in Canadian river systems. Gradually, as the signs and symptoms described in accounts of the Minamata epidemic fail to materialize, the term "Minamata Disease" is discredited as a category of disease applicable to Canada. In the course of competing medical accounts of methylmercury contamination, a parallel change can be seen in physicians' conceptualization of their own responsibility.

I conclude by examining some of the objectifying techniques whereby clinical and epidemiological researchers attempt to construct methylmercury as a stable object of knowledge. In the course of this project, and in the context of overarching structures of medical and political responsibility, aboriginal groups come to be described as "abnormal" in terms of their lifestyle and nutritional practices and consequently "at risk" of methylmercury contamination. Naturalistic imperatives to produce objective knowledge gradually displace more overtly political and humanitarian concerns from the centre of a discursive field which is both medical and technocratic.

Moral Imperatives

Scientific knowledge producers share a number of self-constituting moral imperatives derived from scientific positivism. These include demands for empirical

adequacy, methodological certainty, and technical utility, in each case fixed according to the standards of a particular scientific community or thought collective (see Habermas 1972: 77; Fleck 1935 [1979]: 39-40). In the case of research on methylmercury contamination, which has been simultaneously constructed as a political, medical, legal, sociocultural and bureaucratic problem, scientific imperatives coexist **within** particular individuals, committees and communities **with** other values and imperatives.

The Epidemiologist's Regress and the Fact/Value Distinction

Methylmercury researchers are faced with the dual problems of constructing certain knowledge and of deciding what is to count as certain knowledge. As scientists, then, they have to deal in practice with variants of the logical problem which Collins (1985) calls "the experimenter's regress." As far as methylmercury research is concerned, this might perhaps more appropriately be called "the epidemiologist's regress" or "the neurologist's regress."[44] The general form of such a regress is that attempts to resolve a particular question (e.g. What disease does methylmercury cause?) lead the researcher into a field of related questions, some of which pertain to the definition of the general categories used in framing the original question (e.g. "What is to count as a disease?" or "What is to count as methylmercury?"). These in turn widen out and demand the resolution of other questions, which may lead to others and so on. Although in theory, the regress might go on forever, in practice it must be stopped somewhere.

The practical resolution of a particular variant of this problem was the subject of a presidential address to the Section of Occupational Medicine of the British Royal Society of Medicine in 1965, now frequently cited as a classic paper in the field of epidemiology. Bradford-Hill asks the question: "In what circumstances can we pass from this observed **association** [between a particular element of the environment and signs and symptoms of disease] to a verdict of **causation**?" (1965: 295).

In answer to this question, Bradford-Hill lists nine second-order features which would tend to make an epidemiologist attribute causality to a putative toxin.[45] Almost as an afterthought, he adds:

> Finally, in passing from association to causation I believe in "real life" we shall have to consider what flows from that decision. On scientific grounds we should do no such thing. The evidence is there to be judged on its merits and the judgement (in that sense) should be utterly independent of what hangs upon it - or who hangs because of it. But in another and more practical sense, we may surely ask what is involved in our decision. (Bradford-Hill 1965: 300).

In practice, says Bradford-Hill, the construction of knowledge about environmental toxins has practical and moral consequences and it is both impractical and immoral for epidemiologists to try to ignore them when they construct their epidemiological facts.

In effect, he is pointing to a contradiction which epidemiologists face in trying to see their own activity strictly in terms of an ideology which asserts that the progress of scientific knowledge proceeds by accurately describing the world in terms of categories which correspond with reality, and then finding or discovering pre-existing causal connections between them (Hacking 1991: 261). This positivist account presupposes a categorical separation of fact from value such that only facts (and not, as Bradford-Hill argues, ethical choice) enter into determining the constitution of other facts.[46]

Bradford-Hill's formulation of the epidemiologist's dilemma stops short of absolutely rejecting the positivist account only because he draws a distinction between the exigencies of epidemiology in practice, and the progress of science in general. Even as he ironically acknowledges cracks in the walls which keep fact and value apart, he suggests that advancing science will eventually repair them.

"There are no facts in themselves. For a fact to exist we must first introduce meaning."[47]

Because the role ethical considerations play in the construction of epidemiological facts is rarely made explicit in research papers, there is some point in pushing a little further the question of what is involved in the **value** which leaks over into epidemiological **fact**. In the remainder of this chapter I will maintain that the distinction between ethical choice and epidemiological method is much cloudier than even Bradford-Hill's account suggests. I will examine some of the narrative and practical techniques by which methylmercury is constructed as an object of epidemiological knowledge with a view to trying to understand how particular values and meanings come to be incorporated into the epidemiological accounts. For example, after the epidemic of fatal methylmercury poisoning in Japan, methylmercury poisoning in general came to be so closely identified with Minamata that it was only after repeated failed efforts at identifying mercury contamination in Canada with Minamata Disease, that clinical narratives gave way to a search for alternative forms of disease. More interesting perhaps, are the ways in which relations of power and responsibility articulate with objectifying narrative techniques and with historically embedded Euro-Canadian stereotypes of a sick and deviant Indian "Other" to give rise to epidemiological constructs such as "risk groups" and "target populations." Although rooted in questionable assumptions about normality and difference, such constructs come

to embody danger in a way which is compelling for both epidemiologists and their research subjects. Finally, the division of labour in methylmercury research produces and reproduces distinctions between knowing epidemiological researcher and objectified and unknowing "subject" of epidemiological research in such a way that the practical meanings of the epidemiological facts which are produced come to be deeply problematic for the people on both sides of this dichotomy.

Sources of Medical Knowledge about Methylmercury in Canada

The Mercury Program which was started by Medical Services Branch in 1972 in the wake of the controversy over mercury pollution from chlor-alkali plants in Grassy Narrows. It was later taken over in the James Bay region by the Cree Health Board. In 1986, it came under the purview of the joint Cree/Hydro-Québec Mercury Committee created by the Mercury Agreement. This Mercury Program and the committees and sub-committees associated with it are today the central sites for the continuing production of knowledge about methylmercury in relation to the James Bay Cree.

In addition to the continuing surveillance activities of the Program, there have been five major clinical studies involved in establishing the identity of methylmercury as a toxin in relation to Canadian aboriginal peoples.[48] These include: (1) the initial investigations of physicians recruited by Medical Services Branch in the early 70's (National Health & Welfare 1973; Bernstein 1974); (2) investigations conducted by a task force of Japanese physicians in 1975 (Harada et al 1976); (3) investigations of a committee struck by the Québec provincial government in 1976 to look into the problem of methylmercury contamination in northwestern Québec, (Barbeau et al 1976); (4) the epidemiological study transferred from Grassy Narrows, which was eventually conducted in several of the James Bay Cree communities in 1978 (Methylmercury Study 1980; McKeown-Eyssen & Ruedy 1983; McKeown-Eyssen et al 1983); and (5) an epidemiological study funded by Domtar Pulp and Paper in 1977 in order to settle questions related to litigation (Spitzer et al 1988). There is currently another study of the inhabitants of the communities of Wemindji and Chisasibi proposed for the summer of 1993 (Foran & Kosatsky 1992; Kosatsky 1992).

Shifting Responsibilities, Changing Moralities

Medical writing about the problem of methylmercury contamination in Canada changes dramatically over the decade between the discovery of elevated levels of methylmercury in fish in 1971 and the publication, in 1980, of the results of the first major epidemiological study of an Indian population contaminated by methylmercury. In particular, references to Minamata Disease, which are prominent at the beginning of this

period, gradually dwindle away. With them, references to concerns related to responsibility for compensation and for measures to alleviate suffering give way to concerns with accurate and objective representation of disease. I would like to suggest that there is nothing dispassionate, natural, inevitable, inherently rational or undoubtedly beneficial about this shift from political and humanitarian concerns to apparently scientific ones. In the next few pages, I will describe how this discursive shift from overtly moral to apparently epistemological concerns about methylmercury came about. I will argue that this shift is the outcome of a contested process in which one kind of morality gradually comes to take precedence over others in the context of disputes and debates which increasingly centre on issues related to professional and technocratic responsibility for knowledge production.

(i) The Moral Weight of Minamata

Whereas at Minamata, Japanese researchers and physicians had been faced with an unusual constellation of signs and symptoms of disease lacking a cause, Canadian researchers began with the identification of a cause - unusually high levels of mercury in fish and humans - and had to look for a disease to go with it. After the Japanese experiences at Minamata and Niigata, mercury poisoning became more or less synonymous with Minamata Disease.

However, the term is conspicuously absent from early Medical Services Branch pronouncements on the problem of methylmercury contamination in Canada (e.g. National Health & Welfare 1973; also Bernstein 1974). It was to physicians from Minamata, nonetheless, that the National Indian Brotherhood and its allies turned for an alternative diagnosis to the official one. Contrary to the findings of MSB, the Japanese task force recruited by the Brotherhood stated that "the inhabitants of the regions concerned are polluted by mercury to an extraordinary extent" (Harada et al 1976: 175). However, this categorical statement was hedged by doubts about the kind of clinical effects attributable to the extraordinary pollution of which the Japanese physicians spoke:

> Many neurological symptoms were identified and documented. It cannot be concluded that all of these symptoms resulted from methylmercury. Neurological symptoms caused by other diseases should be distinguished carefully. However, symptoms observed frequently in Minamata Disease - sensory disturbance, impaired hearing, contraction of visual fields, tremor and incoordination -were immediately recognized. (Harada et al 1976: 178)

Later in the same paper we find these statements:

> Neurological findings observed among the group were relatively slight. If congenital Minamata disease, or severe, typical Minamata disease had occurred, the patients were not found among this group. Perhaps those more seriously ill had already died or had been hospitalized. (Harada et al 1976: 182)

In the Japanese physicians' account, the situation at Grassy Narrows is characterized by tremendous ambiguity, uncertainty, and danger. The clinical signs they elicited, although not typical of Minamata Disease, bear a disturbing family resemblance to it: "Certainly some differences exist, but there is no essential difference" (Harada et al 1975: 182). The differences which do exist may be due to differences in the setting: "the mode of life, diet, and source of pollution," as well as differences in the kind and amount of mercury being discharged. "It is true," they suggest, "that there has been no mass outbreak of Minamata disease in the Canadian area under discussion, but this may be due to the sparseness of the population" (Harada et al 1975: 182).

The Japanese physicians also mentioned other ominous signs which, unrecognized at the time, had preceded the occurrence of death and severe disease in humans:

> When Minamata disease was first discovered in Japan, the cause was unknown. Not until two years after the mass outbreak was the cause, methyl mercury, elucidated. If such serious cases had not been found in large numbers, the combination of symptoms could have been overlooked as a distinct disease. However, if one had observed carefully, various signs would have been visible. For example, fish floated to the surface of the sea, birds fell to the ground and cats went mad. The present situation of Canada is exactly like that of Minamata before the mass outbreak of the disease. I thought that I had indicated this similarity by means of fragmentary but reliable data. But although I have assembled the above mentioned facts, many people point out differences between Canada and Japan.(Harada et al 1975: 181)

In Minamata, they suggest, the connection between suffering and methylmercury was drawn only after serious and typical cases presented themselves. These were:

> ... only the tip of the iceberg. It has become clear that non-typical, mild cases vastly outnumber typical and severe cases. In some patients, symptoms were so mild that only sensory disturbance was observed. ... It is a mistake to ignore the effects of methylmercury until typical cases of poisoning are found. (Harada et al 1975: 182)

References to the human consequences of Minamata Disease recur throughout the paper, and Minamata itself provides the implicit backdrop to the Japanese physicians' discussion of their findings at Grassy Narrows. Their message is essentially a moral one, guided by the Japanese physicians' own experiences of the epidemics in Minamata and Niigata, that action should be taken to avoid the possibility of repeating those tragedies.

A search for Minamata Disease also prominently informed the inquiry of the Comité de Étude Sur les Effets Médicaux et Toxicologiques du Mercure Organique appointed by the Québec provincial government to look into allegations of mercury poisoning in the James Bay region (hereafter called the Comité). The nutritional section of this inquiry concluded, for example, with the claim that it had discovered "evidence that the dietary habits [mode d'alimentation] of the study population is sufficient to favour a new episode of Minamata type" (Barbeau et al 1976: 121). Similarly, in his discussion of the ascription of numerical values to clinical signs for the purpose of diagnosis, (see p.57) the neurologist heading the inquiry stated that:

> In the case at hand, which is organic mercury poisoning, there is a constellation of signs which has been clearly identified by retrospective study in previous victims of poisoning, particularly at Minamata. (Barbeau et al 1976: 41)

After a discussion of the difficulties inherent in making such a diagnosis because of the non-specificity of signs, he concludes that, "In spite of everything, it is possible to arrive at an ensemble of symptoms more or less characteristic of mercury poisoning" (Barbeau et al 1976: 42). Thus, the Comité's final conclusion, that its study "confirms that several autochtones in North-West Québec are already victims of the neurological effects of organic mercury poisoning" (Barbeau et al 1976: 149), relies on a gradual elision of meanings (mediated by numbers) between "Minamata Disease" and the more generic "organic mercury poisoning." In the context of subsequent professional disputes over responsibility for the rationalization of medical knowledge, this elision was gradually repudiated and disqualified.

(ii) Disputes about Professional Responsibility

Following the publication of the Comité's report, disagreements among Japanese physicians, MSB physicians, and the neurologist heading the Comité created a minor legitimation crisis for the Canadian neurological community. One medical observer wrote:

> Because of the sinister possibility of mercury-induced irreversible brain damage the current situation demands our full attention. Action is required. (Shephard 1976: 472)

"What should be done?" he asked, and in reply to his own question, called above all for a consolidation of responsibility:

> The multidepartmental approach to mercury poisoning in Canadians should be replaced by one that is the responsibility of a single group. ... What is required is a cohesive effort to synthesize this information and the approaches of the past so that the Indians, the group mainly affected, can be given a clearer indication that a constructive approach will be followed. (Shephard 1976: 472)

He stated that it was "desirable that differences between Canadian and Japanese neurologists, and between Canadian neurologists be resolved" (Shephard 1976: 472). However:

> This will not be easy because these differences stem from differences in interpretation of clinical findings relating to Canadian Indians examined. In part the differences are attributable to a fragmented and quasipolitical approach to the problem of mercury poisoning. (Shephard 1976: 472)

The medical profession in general, he said, had a responsibility to provide the Indians with coherent and authoritative knowledge about the significance of the mercury problem. The quickest route to such coherence was to ensure that a single voice remained responsible for medical knowledge about methylmercury. There could be no public disagreement if there was only one public speaker.

The next paper to deal with the Canadian mercury problem did indeed resolve the voices of several of the main disputants into a single authorial voice: the medical spokesmen for MSB and the Comité study, as well as those of two other prominent mercury experts (Wheatley et al 1979). It was titled "Methylmercury Poisoning in Canadian Indians - the Elusive Diagnosis" and reported on the autopsy of "a male Cree Indian, aged 79 at the time of his death in 1977." Although he died five days after being admitted to hospital with diagnoses of intestinal obstruction and pulmonary tuberculosis, his case was said to be relevant to the problem of methylmercury poisoning because he had been noted in the course of blood screening in July of 1975 to have a high mercury blood level.[49] The patient was referred to Montreal for neurological examination in October, and subsequently re-examined by a different team of neurologists in November. Whereas the discharge summary on the first occasion had stated that "no specific neurological abnormalities which could be clearly related to mercury intoxication" had been detected, the conclusion after the

second examination was that he had "a degree of neurological involvement entirely compatible with definite signs of chronic mercury intoxication" (Wheatley et al 1979: 420).

What the article does not say (to do so would unnecessarily historicize its narrative) is that the first diagnosis was rendered in the course of the MSB mercury program, and the second by the Comité team of neurologists headed by a physician named Barbeau. The case was significant mainly because it was indexical of the differences of medical opinion which had been causing so much controversy, and it was a case which supposedly gave itself up to a court of final appeal for such diagnostic disputes. Since there was a corpse, the pathologist could decide the case.

> As it turned out, the pathologist's decision went against the findings of the Comité: The patient whose case is presented did not exhibit the severe neurological damage associated with "Minamata Disease." (Wheatley et al 1979: 421)

Perhaps it is significant that, for the first time in the professional literature, "Minamata Disease" is enclosed here in quotation marks. It is losing its fact-like status with respect to the methylmercury problem in Canada.[50]

However, the article also contains several clauses which leave open the possibility that significant injury caused by methylmercury might be occurring nonetheless:

> ... artifacts due to faulty preservation were numerous in this material. ... Perhaps neurohistology is too blunt a tool at the levels of methylmercury being seen in Canada and the answers may lie in the fields of neurophysiology and biochemistry. Poisoning may be causing significant injury undetectable on pathological examination. ... Evidence [unspecified] points to biochemical disturbances, which do not necessarily entail detectable histological damage, as the most likely basis for neurological effects which may be observed at the blood mercury levels being detected in Canadian Indians at the present time. (Wheatley et al 1979: 421)

Through the use of such interpretive exit clauses, an investigation which tended to undermine the assumption of neurological toxicity attributable to methylmercury in the Canadian situation could in the end be used nonetheless as grounds to entrench professional and technocratic responsibilities predicated on an assumption of risk. The final conclusion contained in this article states that:

> Given the present problems in early detection, regulatory agencies should continue to allow a substantial safety factor in setting standards to protect the general population. (Wheatley et al 1979: 421).

Hidden in the apparently apolitical, generalizing language here are a number of historically very specific referents. The standards mentioned are those set by a particular federal

government agency - the Medical Services Branch of National Health and Welfare - governing a "general population" living entirely on Indian reserves.

(iii) Statistical and Clinical Significances

The search for Minamata Disease also informed the a priori definition of what constitutes a **case** in the McGill Methylmercury Study, the first **epidemiological** study of the problem of methylmercury contamination in Canada.[51] Roughly speaking, the main research question in this study could be summarized thus: "Given an a priori definition of a case as a particular constellation of signs of disease which can be elicited by neurological examination, is there a statistically significant association between the level of methylmercury in the body and the probability of being a case?"

In epidemiological studies, **case** definition - the identification of a person in the study population as having the particular disease or disorder under investigation - is an important methodological issue. As an epidemiological dictionary points out, "The epidemiological definition of a case is not the same as the ordinary clinical definition" (Last 1988: 19). As far as methylmercury poisoning in Canada is concerned, however, there is no ordinary clinical definition of a case. Indeed, the study is supposed to ask if there is any disease present which might be attributable to methylmercury. It is worth noting, then, that the McGill study does not simply define case according to the presence or absence of specified neurological signs. Even in the presence of such signs, an additional condition is required:

> In order to ensure that subjects with mild abnormalities considered to be of no **clinical significance** were not included as cases, the definition of a case also required that the neurologist had recorded the presence of neurological **disease** in his overall assessment. (McGill Methylmercury Study 1980: 50, emphases added)

Statistical or epidemiological significance thus comes to be predicated on the neurologist's ascription of **clinical** significance to a case. Clinical significance, that is, is incorporated in an objectified form into statistical significance. In its emphasis on disease, clinical significance is in turn predicated on the observation of a disordered and injured body; the assumption is that we simply do not know what is causing the injury. In the tension between these two kinds of significance - the clinical and the statistical - it is just possible to note a tenuous link with the moral meanings which surrounded the allegations of injury associated with the controversy over the chlor-alkali plants.

It is not so much that moral or political significances are stripped away in the course of the contestation and investigation of methylmercury contamination. Rather, these meanings come to be supplanted bit by bit by naturalistic, objectifying significances. The

process is not one of simple substitution. It involves elisions and erosions of meaning as the signs of contamination are constructed and the voices and bodies of the people who bear those signs (they eat fish, their hair and blood contain methylmercury, they are Indians living on reservations, they are diseased) come to be represented and interpreted by others, first by those speaking a language of political morality, and subsequently by professionals speaking dialects of a language of naturalistic morality. The question "What do these signs mean?" is asked and answered differently at each locus of representation. Although there is generally some overlap in the moral concerns which mediate these shifts in the sites and forms of representation, it is not a foregone conclusion that the overall contiguity of meaning will be maintained.

Perhaps the maintenance of such contiguity in the face of centripetal professional interests and moralities is one of the main challenges for a democratic and humanistic society. One of the points I would like to make in this thesis is that a contiguity of meanings in terms of such humanistic concerns is not likely to be achieved through an act of "cultural" translation of the products of knowledge-making processes that are governed by diverging moralities. Contiguities of moral meaning are more likely to be maintained if they are built into the process of knowledge production itself. In the remainder of this chapter I will explore in more detail some of the tendencies in naturalistic research which, with respect to methylmercury contamination in Canada, have created a tension between scientific and technocratic practices and humanistic concerns.

Techniques of Objectification

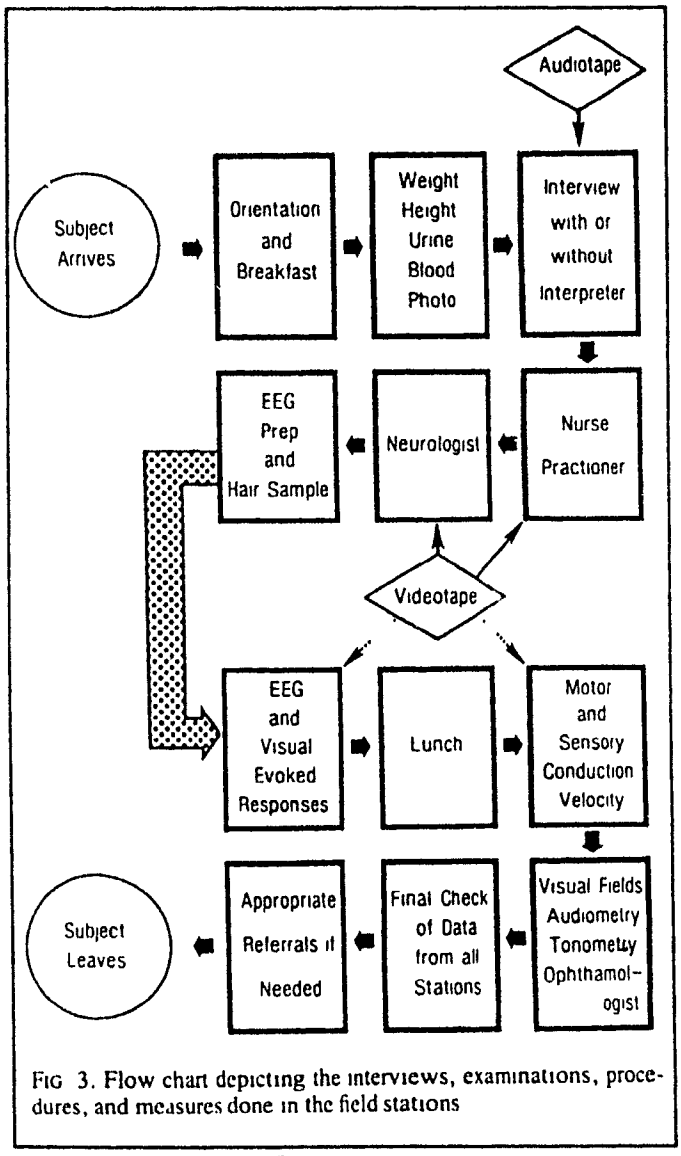

FIG 3. Flow chart depicting the interviews, examinations, procedures, and measures done in the field stations

From Spitzer 1988: 78.

The production of an objective narrative requires above all the elimination of subjectivity. In the first place this means the elimination of the subjective interpretations of those whom epidemiological research designates as "subjects" (i.e. the objects of epidemiological research); and in the second place the researchers' own subjective interpretations. The first is relatively easily accomplished. The second requires a more sustained effort in order to paper over the contradictions inherent in trying to write a story which must seem to write itself. Barthes (1967) describes this problem with respect to what he calls the "so-called 'objective' mode of historical discourse":

> ... the author seeks to stand aside from his own discourse by systematically omitting any direct allusion to the originator of the text: the history seems to write itself. ... [T]he author discards the human persona but replaces it by an "objective" one; the authorial subject is as evident as ever, but it has become an objective subject.

The Neurological Examination

In all of the studies of methylmercury contamination, the central technique by which researchers materialize putative signs of methylmercury poisoning is a simple neurological examination. For example, the clinical examination performed for the Comité inquiry in Québec included nineteen rapid tests of function, including six aspects of sensation, and nine of "spino-cerebellar" function, as well as evaluation of muscular force, normal and abnormal reflexes. In practice, the physical examination is brief, ranging from 10 to 30 minutes in length, and consists of a series of uncomplicated physical manoeuvres.[52] The history taking is also usually brief, and consists of asking the patient if he has any physical complaints either in general or in response to a standardized list of symptoms pertaining to the nervous system (e.g "Do you have any numbness or tingling in your legs?").

This process of clinical examination - the level at which signs are elicited from the human body - varies only in detail from one study to the next. There is no technique at this level which one could point to as conferring significantly greater power to one study as compared to another. The differences here are details: an electronic hearing test replaces a ticking watch in one study; the procedure for measuring visual fields is slightly modified in another. All of the signs of disease which are eventually reported as bearing on the presence or absence of mercury poisoning are derived from the neurological examination.

It is perhaps worth noting then, that the whole edifice of clinical and epidemiological knowledge about the effects of methylmercury on the human body is derived from a procedure which contains few tools for revealing secrets about the patient's body of which the patient is himself likely to be unaware. In spite of this, the patient's role

in the procedure is a fundamentally passive one. It requires nothing of him but to submit to examination, to do as he is told, and to answer questions by indicating yes or no.

This is because the function of the examination is to materialize signs in relation to the patient's body **for the examiner** so that he may perform further operations on them, for example, assigning them numerical values, and/or inscribing them on charts, tables, and maps of the patient's body. Through such operations, signs elicited from the patient's body can be translated and inscribed in forms in which they can be incorporated into particular clinical forms of representation. These in turn can be made to stand for the functioning of a whole community of bodies relative to a standardized norm. In this way, the procedure transforms the examiner into an inscription device[53] that translates signs from the individual body into numerical values standardized according to notions of normality fixed by his training and clinical experience. The closer the procedure approaches the ideal of naturalistic objectivity, the more automatic the examination becomes and the less information passes consciously from the "subject" to the examiner. It is this **ideal** which differentiates scientific medical practices from other diagnostic practices. It is in the degree to which it is implemented that diagnosis in epidemiological research differentiates itself from everyday clinical practice.

This concern with stripping away all significances but objective ones is expressed in concerns with "**blinding**" the examiner to any knowledge which might distinguish one patient from another. "Blinding" is a commonplace conceptual tool used in epidemiology. Based on a theory which hypothesized that unconscious psychodynamic processes influence the evaluation of bodily sensations mediating human experience, its use was introduced into experimental measurement by Pierce and Jastrow in 1884 (Hacking 1990: 205).

In the McGill study we find statements such as this:

> All examinations pertinent to the collection of data for analysis were performed by individuals who were uninformed as to the results of previous methylmercury measurements of the subjects. Individuals were asked not to seek this or any related information from the subjects. (McGill Methylmercury Study 1980: 32)

Problems with "blinding" meant, for example, that the study design had to be modified to exclude the evaluations of any of the Cree paramedical observers who had been trained for this purpose:

> Neurological abnormalities detected during the screening examination were not considered in the case definition because it was probable that the Cree paramedical observer who evaluated the screening tests was aware of the

> life-style -although not the past methyl mercury measurements of some subjects and was therefore not entirely blind to their methyl mercury exposure. (McKeown-Eyssen & Ruedy 1983: 467)

Because they cannot be "blinded" to their own experiences the accounts of the Cree "subjects" concerning their own bodies are also of no use to an objectifying epistemology. The rationale for this exclusion is based not so much on a concern with unconscious psychodynamic processes as it is on a fear of conscious misrepresentation or bias. Thus, we read in the McGill Study:

> Symptoms reported by the subjects were not considered because most subjects were aware of the measurements of their methyl mercury exposure made in 1975 and 1976 and because some were litigants in a suit concerned with contamination of the environment with methylmercury. (McKeown-Eyssen & Ruedy 1983: 467)

Interesting in this respect are some of the results of the Domtar Study. Because this study did not use an a priori definition of disease to separate **cases** from **controls**, it was able to treat "stated sickness" as one variable among others for statistical analysis. The Domtar Study divided its study population into four groups, namely:

1. The "Self Designated Disease Group" - Cree Indians living in the river system contaminated by mercury from the chlor-alkali plant, "and who alleged that they had methylmercury intoxication."
2. "Neighbourhood Controls - Cree Indians who lived and fished in the same villages ... and yet who did not allege that they had methylmercury intoxication."
3. "Ancestral Controls" - Members of an Algonquin population living on "a water system free from industrial mercury contamination ... and who followed a traditional ancestral lifestyle where fish provided the major source of dietary protein."
4. "General Comparison Group - White and Algonquin individuals living in the [contaminated river] system at varying distances from the local chlor-alkali plants." (Spitzer et al 1988: 73)

The variable "stated sickness," which was defined as "the prevalence of any hospitalization, confinement to bed or other disability during the last six months, as stated by the subject" (Spitzer et al 1988: 89), was lower in the "Self Designated Disease Group" group than in any of the control groups. That is, the people in the "Self Designated Disease Group" tended to designate themselves as diseased less than anybody else. The researchers concluded that "There was no evidence of conscious attempts to overstate illness or disability by the subjects" (Spitzer et al 1988: 95).

Other ways of eliminating the problem of subjectivity in this and the Domtar Study (Spitzer et al 1988) include the videotaping of all neurological examinations for separate "blinded" evaluation by each of the neurologists. A separate section of the McGill study is

devoted to "Observer-Variation," the results of which are subsequently taken into account in trying to interpret the findings of the study.[54]

The other refinement of objectification possible is to eliminate human examiners in favour of machines capable of measuring and quantifying particular signs. The McGill and Domtar studies do this to some extent, for example, by using electroencephalograms and machines to measure nerve conduction velocity (Spitzer et al 1988). Another study, planned for 1993 in Chisasibi, proposes to carry this form of objectification even further. The researchers plan to make use of laser technology to develop sensitive instruments with which to perform fine measurements of tremor and visual fields (Kosatsky 1992; Kosatsky personal communication).

Ideally, an objectifying study entails the gradual elimination of particular possibilities of interpretation so that in the end the observational method seems to speak for itself. What then, is one to make of such an ideally objective utterance or inscription? Let us suppose that the study proposed for 1993 manages to demonstrate a statistical correlation between bodily levels of mercury and a numerical variable derived from a sensitive laser-machine which registers the severity of otherwise undetectable tremor. What might the practical or moral significance of such a superfine objective variable be? Even if subjective meanings are maximally stripped away through objectifying research techniques, the problem of interpreting the resultant facts in terms of subjective concerns eventually returns. It seems possible for the objectification of knowledge to proceed to the point of producing facts which are certain but meaningless.

Making Up Numbers

> But it should be remembered that though scientific knowledge invalidates qualities, which it makes appear illusory, for all that it does not annul them. Quantity is quality denied, but not quality suppressed. (Canguilhem 1991: 110)

Numbers are commonplace, and I am sure I would not be keen to live in a world without them. My aim in this section of the thesis is simply to describe some of their uses in making up methylmercury as an apparently value-free object of epidemiological knowledge.

Assigning numerical values to qualitative observations of a particular phenomenon is a move made frequently in creating objective narratives. Indeterminate aspects of a phenomenon that don't give themselves to translation into numbers gradually fade from view in favour of a simplified numerical object which replaces them. Numbers in the

company of other numbers in this sense seem to take on a life of their own. With only a little effort they beget new numbers and tables of numbers. It is hard to imagine a faster way to move towards (if never quite arriving there) the creation of an "objective subject" capable of narrating itself.

Perhaps the most transparent case in which the ascription of numerical value is used in support of a claim of value-free objectivity occurs in the Comité study. The neurologist conducting the clinical inquiry divides neurological signs into six groups and assigns each a number based on his estimate of its value in making a diagnosis of "organic mercury poisoning" (e.g. one point for absent reflexes, four for constriction of the visual fields). The score for each positive sign is multiplied by a factor for severity (0=normal, 3=severe) to produce a "severity score." Peg board tests of manual dexterity are evaluated to produce a "performance score." The system of evaluation is tested on a "control group" of six "normal" men and women selected from among the people accompanying patients to appointments in the neurologist's urban practice in southern Québec.

From the numerical criteria he creates, and based on criteria of abnormality he devises for mercury blood and hair levels, the neurologist then allocates each case into one of several categories of probability with respect to the diagnosis of organic mercury poisoning. These include **certain**, **probable**, and **suggestive** categories, as well as a residual **asymptomatic** group. Because the neurologist has devised the whole scoring system de novo, there is little that he can say in defense of decisions to set a categorical limit here rather than there. The closest he gets to such justification is a statement that "It was decided not to consider a patient as presenting symptoms **suggestive** of organic mercury poisoning unless his 'mercury-neurologic' score exceeded, by a minimum factor of 2, the average score of the control group" (Barbeau et al 1976: 43). Nonetheless, the numbers and tables accumulate, and in the end the inquiry claims to have "effectively revealed in a certain manner that several individuals residing in Northwest Québec demonstrate objective signs of neurological intoxication by organic mercury" (Barbeau et al 1976: 170, underlining in original).

The Trouble with Normal

> One can, then, use the word "normal" to say how things are, but also to say how they ought to be. The magic of the word is that we can use it to do both things at once. The norm may be what is usual or typical, yet our most powerful ethical constraints are also called norms. ... Nothing is more commonplace than the distinction between fact and value. From the beginning of our language the word "normal" has been dancing and prancing all over it. (Hacking 1990: 163)

What the concept of normality does regularly for us, Hacking suggests, drawing on Canguilhem is to "close the gap between 'is' and 'ought'" (Hacking 1990: 163). It does so partly because it can mean so many things, and one can shift rather quietly between the various meanings of the word from one moment to the next. With respect to methylmercury contamination, normality is used to attribute particular positive or negative values to culturally specific habitual practices (e.g. dietary practices or subsistence harvesting) in the guise of objective, value-free description.

The most common meaning of "normal" in use today is that which is most closely allied to the statistical definition of the norm: for a given domain, what is normal is the most common, the usual, the standard, or the most regular. Hacking suggests that this meaning rose to prominence in the early nineteenth century when it began to take the place of the concept of "nature" in discussions about what is good or right for people. What might once have been defended or condemned in terms of what is "natural," we now defend or condemn in terms of its normality. Natural was what was right by God; normal is what is right by us or, perhaps, right by them.

Another meaning was introduced into medical discourse as a central principle of Broussais' physiology in the nineteenth century, and then into sociology through the positive philosophy of August Comte (Hacking 1990: 164). Broussais' principles defined pathological states of organs in terms of deviations along a continuum from a normal healthy state. In this conception what is diseased is that which deviates from the norm. Hacking argues that, in incorporating Broussais' ideas about physiology into his sociology, Comte expressed and strengthened "a fundamental tension in the idea of the normal - the normal as existing average, and the normal as figure of perfection to which we may progress" (Hacking 1990: 168).

Hacking also points to a frequent elision of meaning created by attempts to apply the notion of categorical man-made **standards** of quality developed for man-made goods to continua of normality/abnormality or normality/pathology recorded from nature (Hacking 1990: 165). By this elision, **standards** of normality could be imposed upon the natural

world as easily as they came to be required of manufactured goods over the course of nineteenth century industrialization.

Standards

It is trouble with standards that explodes the whole controversy regarding methylmercury contamination in Canada (see above p.69). The running together of various connotations of normality with the idea of bureaucratic standards also contributes an air of objectivity and facticity to official pronouncements of danger. This elision between the notions of standards and norms is explicit, for example in the Comité inquiry which states in a section headed "General philosophy":

> In fish ... the concentration of organic mercury frequently surpasses the federal norm of .5 ppm. This constitutes a danger for those who regularly consume this fish. (Barbeau et al 1976: 170)

The next sentence claims that the inquiry has demonstrated the presence of "objective signs of organic mercury poisoning" and the next paragraph assimilates the idea that mercury is physiologically unnatural with concepts of abnormality and pathogenicity:

> In effect, it is known that mercury, as a trace element, has no particular enzymatic function in living organisms, and hence in man. Any concentration of this metal in tissues, however weak it might be, becomes therefore an aggression against the enzymatic systems responsible for metabolic homeostasis. ... Any amount of mercury in man is therefore harmful to health. (Barbeau et al 1976: 171, underlining in original)

The only way this chain of propositions could seem syllogistically sound is if one takes for granted the validity of the implicit identifications it contains of the unnatural with the abnormal and with the pathological: no enzymatic function **therefore** unnatural **therefore** abnormal **therefore** pathological **therefore** harmful. It is a style of reasoning based on categories of meaning embedded in a particular culture (scientific medicine) and wedded to a particular history (Broussais' notion of the pathological assimilated to Claude Bernard's notion of a homeostatic *milieu intérieur*.) It is also a style of reasoning which is anachronistic at best. That it doesn't necessarily work empirically becomes immediately evident if one substitutes gold (which has some therapeutic use in the treatment of rheumatoid arthritis) or penicillin for mercury in the quoted passage.

Difference and Pathology

This style of reasoning in which observations are assimilated and identified with underlying categorical forms of difference, abnormality and pathology is a recurrent one. Sometimes it is applied simultaneously to different aspects of the same phenomenon so as

to create what Hacking describes as "the standard feature of a risk portfolio, namely that at almost the same time opposite extremes are presented as dire perils" (Hacking 1990: 22).

This pattern of contradictory evaluations of normality coming together can be seen quite clearly, for example, in the "Nutritional Inquiry" of the Barbeau Study. After a preamble in which the Cree are described as "the greatest experts of the ecology of their own region" by virtue of conservation practices embedded in "ancestral custom" (Barbeau et al 1976: 92) the nutritional inquiry claims that the Cree regularly consume "on average, one pound of fish per day per person in the summer! (Barbeau et al 1976: 94, underlining and exclamation mark in original)."[55] It doesn't matter that the consumption practices described here are positively evaluated by the light of a romantic ideology which characterizes the Indian as timelessly pre-modern and in harmony with nature (cf Berkhofer 1978: 47-49; Bieder 1986). Difference is difference, and is liable to be translated into pathology whatever the other evaluations which may be attached to it. Because the Cree eat such a lot of fish, the situation is "such that it is possible to place the nervous system in danger in a single summer" (Barbeau et al 1976: 102, underlining in original).

The element of double jeopardy is introduced by the simultaneous nutritional evaluation of the overall Cree diet as abnormal by other standards. Thus, though in one sentence we are told that the Cree habitually consume enormous amounts of fish and game, in the next we are told that the Cree diet is generally poor: low in protein [!] relative to sugars and fats, and low in fresh fruits and vegetables. It does not help matters that the Cree apparently drink too much tea and alcohol (p.103).

With respect to the white population surveyed, on the other hand, the nutritionists conclude that the diet "is adequate, that is to say that it provides all the necessary nutritional elements. Each food group is well-represented, and the dietary habits are [predictably] almost identical with those of Québecois in general" (Barbeau et al 1976: 114). Although the white people are also noted to consume alcohol, they do so "in a reasonable manner" (Barbeau et al 1976: 115).

A surplus of mercury via an abnormally high intake of fish relative to the white population is thus combined with a deficiency of just about everything else by other standards of normality. On both counts the translation of abnormality to pathology is a foregone conclusion, and the Cree come to be labelled as doubly susceptible to disease:

> In individuals subject to such a deficiency, the threshold of resistance to aggression against the cells of the nervous system is markedly diminished. The least exposure to toxic products such as mercury, would be necessary to cause signs and symptoms [of disease]. (Barbeau et al 1976: 107, underlining in original)

It is impossible to separate "facts" such as this from the meanings which constitute them: romantic stereotypes of difference, and professional and bureaucratic standards of normality.

Risk & Responsibility

Puzzle # 1

In most medical encounters, the patient presents to the diagnostician with signs which she and/or her relatives consider to be candidates for a disease falling within the diagnostician's realm of competence (Young 1976: 16). The signs the patient presents identify him as "patient" in relation to a particular diagnostician. With respect to the problem of methylmercury contamination in Canada, on the other hand, the patient's designation as a member of a particular group "at risk" defines him as "patient" in relation to a particular diagnostician. This designation had to be constructed before the search for signs of disease on the patient's body could begin. Almost without exception people "at risk" of methylmercury contamination in Canada have been members of aboriginal communities, many of them in reserves distant from centres of industrialization. One might well ask how this state of affairs came about.

Puzzle # 2

In 1990, the Activity Report of the James Bay Mercury Committee states that:

> After several years of intensive monitoring of the Cree population, the Cree Board of Health and Social Services of James Bay is now able to identify the individuals at greatest risk. .. It has therefore optimized its program for monitoring mercury levels to include:
> - women of child-bearing age (15-39), particularly those with mercury levels in excess of 9 mg/kg;
> - persons over 40, in particular:
>   - regular trappers;
>   - participants in the guaranteed-income program [for hunters and trappers];
>   - all those with previous levels over 30 mg/kg;
>   - those not previously sampled;
> - persons wishing to learn their mercury levels. (Mercury Program 1990: 8)

The same report also states that:

> An examination of the results of the past few years confirms that the majority of Crees have a level of mercury exposure that not only is not problematic for their health, but also permits a promoting of the nutritional value of fish in their diet. Only one woman of child-bearing age exceeded

> the Cree Board of Health and Social Services of James Bay standard of 9 mg/kg [ppm][56] measured in the hair, in 1989. Among adults over 40 years of age, who are therefore closer to traditional activities, only one person had a level greater than 60 mg/kg [ppm][57] in 1989, compared with 48 in 1984. (James Bay Mercury Committee 1990: 9)

Currently then, we have a situation in which 1,500 people out of approximately 9,000 in the James Bay district are designated "at risk" from eating fish. However, the report also states that only two of these people "at risk" have blood levels of mercury which place them in danger, while the majority have a level of mercury exposure "that is not only not problematic for their health but also permits the promotion of the nutritional value of fish in their diet." We have come full circle here from the recommendations of the Comité and the Medical Services Branch Programs, which were predicated on the assumption that the least amount of mercury and hence of fish, was harmful to human health. What does this language mean, that designates people "at risk" from something which at the same time ought to be promoted for its nutritional value? Perhaps easier to answer is the complementary question: how have these concepts developed?

Risky Beginnings

I would like to suggest that the meaning of being "at risk" is inherently problematic and that it can be most adequately understood as a designation which has been manufactured to justify the actions of one group of people upon another. It always occurs in the context of particular relationships of power and difference: one corporate body is held responsible for and/or asserts its responsibility over another through claims of privileged knowledge about hidden dangers.

The phrase "at risk" appears early in Medical Services Branch documents dealing with the problem of methylmercury in Canada. The report of the Health and Welfare Task Force on Organic Mercury in the Environment at Grassy Narrows and White Dog, precedes its first use of the term with claims that it possesses privileged and authoritative knowledge about the people it subsequently designates "at risk":

> The Task Force was able to gather a considerable amount of information on the habits and life-style of the residents of both communities and concludes that mercury has created adverse effects by reducing opportunities for employment and by restricting a natural source of food from the diet. Up to the present time, the effects of the mercury contamination of the Wabigoon-English River system appear to have been mainly economic, social and cultural, and any adverse effects to the health of the Indian people apparently result from the elimination of fish as a source of animal protein in the native diet; or as a consequence of loss of employment opportunities which have brought about enforced idleness leading to dysfunctional behaviour patterns. (National Health & Welfare 1973: 13)

The two faces of being "at risk" from an abnormal diet are evident here. The Indians are not only "at risk" from eating abnormally large amounts of fish relative to the white population. Not eating fish also places them in danger because not to do so is abnormal with respect to the "traditional" diet:

> Store bought foods of dubious quality and nutritional value have largely replaced traditional foods, with a resulting reduction in protein and increase in carbohydrates. From the aspect of child and maternal health, this is perhaps the most serious problem. (National Health & Welfare 1973: 14)

"Fish" is here assimilated under the broader category of "traditional foods," a notion which implies its own standards of normality and hence of pathology.

We find the first use of the concept of a people "at risk" under the heading "Future Program," where it is tied explicitly to the Task Force's vision of a particular distribution of responsibility:

> In the opinion of the Task Force the preceding discussion predicates the on-going medical Service program for the future and its members are in unanimous agreement with the following proposals:
>
> > Responsibility for the on-going program relating to the health of the native people in White Dog and Grassy Narrows would revert from the Task Force to the Regional Director [of Medical Services Branch], Ontario Region.
> >
> > Because of the persistent nature of the mercury pollution in the Wabigoon-English River system, the populations of White Dog and Grassy Narrows must be considered at risk. For this reason, health programs must continue to exercise a high level of surveillance of the people, with particular emphasis to pregnant females and neonates.
> >
> > Because fish consumption persists, it will be necessary to continue the blood and hair sampling program started by the Provincial government. The Task Force understands that the Provincial Ministry of Health is willing to continue this program in close co-operation with the Department of National Health and Welfare. (National Health & Welfare 1973: 14)

On the next page we find the first precursor of the Cree Health Board's notion of a "target population" - the hunters and trappers, those most Indian of Indians. The people least at risk from assimilation to abnormal "modern" dietary practices by Cree standards are those who are conceived as in most danger from a form of industrial pollution which penetrates the wilderness. One way or another, difference of some kind brings "risk" to the Indian:

> Previous mercury testing programs have missed a vital subgroup of the Indian population, namely the hunters and guides and their families who are

> frequently absent from their communities. Future mercury-testing programs must take this high-risk group into account and field personnel taking samples should be prepared to seek out persons absent from their villages at the time of the survey. This may entail visits to fish camps, tourist lodges and hunting areas. (National Health & Welfare 1973: 15)

There are echoes here, in the image of field personnel bringing syringes, test-tubes and claims of medical knowledge to the hunters and fishing guides, of missionaries penetrating the wilderness to bring religion to the Savages. If only the Indians would accept the message offered them, they might yet be saved from an invisible threat within. Risk, like sin, runs deeper than the surface of the body.

Certain passages in the Task Force report suggest a degree of incoherence in the claims it makes for danger:

> Despite warnings, inhabitants ... will probably continue to eat locally caught fish, although, for the majority, fish is not a main factor in their diet. There is, therefore, a requirement to continue surveillance of the population at risk.

Which, then, is the greater risk: eating fish, not eating fish, doing both at once, or being subject to the recommendations of a Task Force?

Difficulties with the coherence of the message delivered by Medical Services Branch are papered over by attributing them to difficulties in communication and not too subtly casting the responsibility for incoherence back onto the community "at risk":

> The inhabitants of White Dog and Grassy Narrows are relatively well-informed on the subject of mercury poisoning, but information is subject to misinterpretation, hearsay and distortion. This problem is aggravated by the fact that there is no written native language in the area. ... Ways and means to improve communications with the Indian people are necessary to impart knowledge of the mercury situation, to discourage fish eating and to encourage interest in diet and nutrition. (National Health and Welfare 1973: 17)

This passage implies that the problem is not with the message, nor with the messenger, but with the mode of communication by which it is transmitted to the Indians who are, though "well-informed," liable to subject what they hear to "misinterpretation, hearsay and distortion."

Risky Generalizations

The relationship between structures of difference, power, responsibility, and the constitution of groups "at risk" is particularly apparent in the light of MSB's decision two years later:

> In view of the multiple potential sources of environmental mercury across Canada ... the mercury program should be expanded to cover all communities for which Medical Services Branch has health responsibilities" (Wheatley 1979: 51).

The rationale for this is partly that "The Indian and Inuit people of Canada eat more fish, game, and sea mammals than do most other Canadian residents, and, therefore, are more exposed to the dangers of certain environmental contaminants than is the general population of Canada" (Wheatley 1979: 13). Again, the tacit style of reasoning here which carries so much weight in the face of uncertainty and in the context of an assumed responsibility for health is the deeply embedded and therefore unexamined movement from the idea that what is not usual is abnormal and what is abnormal is pathological.

By 1978, 35,683 tests for mercury had been carried out in the 350 Native communities for which Medical Services Branch had "health responsibilities," including, urban communities such as Kahnewake, which is located across the St. Lawrence River from Montreal. Of these, approximately 25,000 (68.5%) were said to be "within acceptable normal limits (less than 20 ppb)," 10,400 (29%) were "in the range of increasing risk between 20 and 99 ppb," and 900 (2.5%) were "in the 'at risk' group with levels over 100 ppb" (Wheatley 1979: 63). These 900 "at risk" tests were recorded in approximately 550 people, only about 300 of whom lived in the four reserves adjacent to the chlor-alkali plants which had given rise to the concern in the first place. The remaining 250 people were scattered throughout 39 of the 350 communities tested (Wheatley 1979: 141).

Having constructed all of the communities for which it has responsibility as "at risk," Medical Services Branch then refines its definitions of risk on the basis of human blood mercury levels. Although there are federal standards for commercial fish, none such exist for humans, so MSB defines them. In consultation with "an internationally recognized expert on mercury" (Wheatley 1979: 51), and in accordance with recommendations from the World Health Organization and a "Swedish Expert Group" (Wheatley 1979: 97), the MSB physicians devise a table of standards for levels of mercury in blood (Wheatley 1979: 97):

<20 ppb	Normal acceptable range
20-100 ppb	Increasing risk
>100 ppb	At risk

The rationale for the construction of these categories goes as follows: the lowest blood levels at which neurological signs were documented during epidemics of mercury poisoning in Japan and Iraq was in the range of 200-500 ppb (Wheatley 1979: 54). The lower end of this range is divided by a factor of 10 to allow for a margin of safety. The two ranges of risk - "increasing risk" and "at risk" - are established for separate purposes. All those "at risk" are advised to undergo neurological and ophthalmological examination and to remain under chemical surveillance. The lower limit of the "increasing risk" range is used to develop fish consumption guidelines.

The MSB physician describes his own reasoning in devising these consumption guidelines thus:

> The standard of 0.5 ppm maximum acceptable level of mercury in fish, is based on an assumption of an individual average Canadian consumption of less than one pound of fish per week. The average Canadian Indian who consumes fish usually eats a considerably greater amount than this. Medical Services Branch, therefore, recommended in 1976 that, for Indians and others eating large quantities of fish, the maximum acceptable level of mercury in fish should be 0.2 ppm. ... The standards applied are conservative but are felt to be realistic with the data available. (Wheatley 1979: 54)

The legal standard for selling fish to the "average Canadian" is taken for granted as providing a reasonable standard for deciding how much mercury and how much "risk" would be acceptable to the "average Canadian Indian." On this premise, MSB develops stringent fish consumption guidelines for Indians which allow for a maximum weekly intake of 0.20 mg methylmercury. This means, for example, that the weekly allowable consumption of fish containing 1 ppm of mercury, (which under FDA regulations in the United States would have been allowed for commercial sale in unlimited quantities) was limited to .46 pounds per week. Native people in northwestern Québec and Ontario were advised to curtail their consumption of fish dramatically. Given the levels of mercury prevalent throughout the James Bay area, even at sites remote from any identified industrial source of mercury, literal application of these quidelines would have meant closing the native fishery altogether in Quebec (Allan Penn, personal communication).

By the end of 1982, the number of people across Canada defined as "at risk" for the purposes of continued chemical and clinical surveillance had grown from 550 to 600 (Wheatley 1984: 18). In addition to "at risk" individuals, there were now "at risk" communities, which were formally defined as:

> ... an area where an individual, at any time, was considered to be "at risk" or where fish, game, or sea mammals have had levels in excess of 0.2 ppm. (Wheatley 1984: 18)

Since levels above .2 ppm are common in piscivorous (fish-eating) fish that are sold commercially in urban Canada (e.g. pike, walleye, tuna, swordfish), it perhaps bears pointing out that if such standards were applied to communities other than native communities, most neighbourhoods with a fish market would find themselves "at risk." As it is, 52 aboriginal communities were so designated.

A further modification of the group designated as "high-risk" by the Grassy Narrows Task Force in 1973 occurred in 1984 when the term "**Target population**" formally entered the MSB lexicon. "Target populations" were so named in order "to identify those individuals who may be potentially 'at risk'" (Wheatley 1984: 18). This group, not necessarily yet "at risk" or even at "increasing risk" according to MSB's blood or hair mercury standards, included "fishing guides and known heavy fish eaters," "heads of households," and "pregnant women because of the increased vulnerability of the fetus to methylmercury" (Wheatley 1984: 18).

A further distinction also comes to be superimposed on the category of people "at risk." Because clinical examination in the first few years of the Mercury Program had revealed few neurological findings attributable to methylmercury contamination, only those with mercury blood levels above 200 ppb are now be recommended for neurological examination. Ironically, at the same time that MSB acknowledges being unable to find evidence of mercury poisoning in most of those "at risk" on the grounds of blood mercury levels, it announces that "because specific intakes give rise to somewhat higher blood values than previously thought, the safe weekly consumption rates have been revised downward by about 25%, so that the 20 ppb blood level is not exceeded" (Wheatley 1979: 18).

The Application of Risk

How were the categories of knowledge of the MSB Mercury Program applied at the level of the communities and individuals designated "at risk"? I can only provide a sketchy answer to this question. A few "educational" meetings were held, including screenings of a film about "Minamata Disease" in Japan. The taking of blood and hair samples for mercury testing became routine in many communities. In the James Bay communities, talk about "organic mercury poisoning" was translated into "neemasakusoon" or "fish sickness," a new term which presented its own problems of interpretation in the local vocabulary.

Those who had their hair or blood tested eventually received letters such as the following, sent to a resident of Fort George to inform him in July of 1978 that his mercury blood level the previous October had been in the "normal" range:

What does this [blood level] mean to you? The amount of mercury that you show is not known to give any trouble or disease to people but you could become sick if this amount in vour blood shows any increase in the months to come. What are you to do in order to prevent this increase from occurring?

First of all you have to recognize and accept the fact that the mercury found in your blood comes from eating fish that has been poisoned by mercury.

The next thing to do is to have the nurse or mercury worker check your hair every year so that you be informed of any increase in your body mercury level. A Mercury Worker will be in to see you when the time comes: your willingness to accept this further testing is very important for your own protection. In the event that any such increase in your body occurs, you will know that you have not been careful enough in eating only the good fish and that medical examination may become necessary. If this is so, you will be advised.

The Cree Regional Health Board [in the process of taking over responsibility for the Mercury Program in the James Bay Region] has recently named native mercury workers to help you in dealing with the mercury problem in your area; these persons will be meeting with you and will be able to answer questions that you might have on these matters.

In this letter we have informed you of the many things that you have to do to protect yourself against this terrible disease of mercury poisoning. We will give all the help we can; to give you this help we need your collaboration and your understanding. The most important thing to do right now is to check how much fish you eat weekly and be careful not to increase that amount.

Dr._____ _____, M.D.
Regional Director
Medical Services Branch

Being "At Risk" Today

In the James Bay region, the Mercury Program of the Cree Board of Health has inherited many facts and categories from the Medical Services Branch. These include a large body of facts and statistics built up around the assumption of Indians in general as being a people "at risk", and of "traditional Cree" in particular as being a "target population" at special risk. Since taking over the Program, the Cree Health Board has tried to narrow its definitions of the group "at risk" and to liberalize its own guidelines regarding fish consumption. This has produced the paradoxical result that the Health Board is now trying to encourage those who are "at risk" of mercury contamination because they eat fish to eat more fish for the sake of their health. Those running the Program explicitly frame what they are trying to do in terms of reversing some of the harm caused by the MSB Mercury Program

What then, does the notion of being "at risk," mean? If I want to answer this question in terms of what it says about the people to whom it is applied, then I think I would have to say that I don't know what it means. It says very little of use about the quality or quantity of danger posed by methylmercury for the Cree in James Bay, for example. Perhaps the meaning of this particular designation can only be adequately accounted for as the product of a particular set of culturally embedded styles of reasoning, historically situated events, and institutionalized practices and power relations.

Chapter 5: Implications

I began this thesis by trying to account for a puzzle. On the one hand, methylmercury has been represented in newspapers and pamphlets as a potent toxin which has produced severe bodily injury in Canadian Indians. In the community where I began my fieldwork, posters and leaflets carry prominent warnings about methylmercury contamination, depicting it as flecks of black substance settling in the brains and spinal cords of an adult couple. In Chisasibi there is also a complex institutional apparatus devoted to research and education about methylmercury contamination. On the other hand, nobody I spoke to in the community had ever seen or heard of anybody having suffered physical symptoms by methylmercury contamination. Most of the people I talked to (including doctors in the community) did not know what form such symptoms might take.

How then to account for these discrepancies? In the body of this thesis I have only been able to provide rough outlines of such an account. I have suggested that the significance of methylmercury can only be understood as the product of a particular history of conflict and colonialism. That is, the "risk groups" into which the people of Chisasibi now find themselves categorized can only be adequately understood in the context of the peculiar colonial legacy which has created the Canadian reserve system and constituted a single federal bureaucracy agency as responsible for the health of the people who live in it.

I have also suggested that the salience of methylmercury contamination in Chisasibi today can best be understood in relation to a peculiar moral economy which is largely the product of a more recent colonial enterprise: Hydro-Québec's continued appropriation of the rivers of the James Bay basin for hydro-electric development. Specifically, I have argued that the structure of the Mercury Committee recapitulates that of the numerous other committees which have been constituted to deal with conflicts over the field of rights and obligations inscribed in the James Bay Agreement, the contract which emerged as a partial resolution to the initial round of confrontation over the hydro-electric project in the early 1970's. Hydro-Québec has inserted itself into a position of power on the Mercury Committee by promising to provide money - some for research, a little for "remedial works" or compensation - from its own coffers and from those of the government of Québec. The Cree government in turn recognized that it required the financial resources of both Québec and Hydro-Québec in order to produce authoritative knowledge about methylmercury **and** to gain compensation for any injury from methylmercury which might eventually be acknowledged.

The role of competing and conflicting interests in constituting the Mercury Committee is papered over in legal language which invests it with a technocratic mandate to

"alleviate socio-cultural, health, social, environmental, and economic negative impacts upon the Crees and to provide for remedial measures" (Mercury Agreement 1986, Sec. 4.1). Issues of compensation thus come to be subsumed under technocratic imperatives, and the Committee becomes the site for producing knowledge about methylmercury according to a number of competing medical, scientific and economic imperatives **within** this technocratic framework. All of these imperatives work themselves out in terms of an overarching naturalistic framework which dictates that accounts be given in absolute terms, stripped of anthropocentric "subjective" properties

Because of the tacit acceptance of most of the Mercury Committee members that this naturalistic framework is the correct one in which to conduct the Committee's business, the more **overtly** moral and political issues which gave rise to the Committee in the first place become something like shameful family secrets at a highly formalized gathering. Although everybody knows about them and about the tensions and problems they might be creating, few want to talk about them. Those who do want to do so can't find a way to do so in the formal language which is appropriate to the circumstances.

I would like to suggest that the naturalistic language which is routinely adopted to address problems posed by methylmercury contamination leaves little room for either self reflection or for talking about moral problems which confront scientific knowledge production. Such things are not (as a Mercury Committee member might say) part of the Committee's mandate. As a Cree representative to the Committee told me: "These are technical people talking technical. You let them be, just wait for the recommendations."

The secrets no one can talk about include the following. Although methylmercury researchers like to conceive of themselves as describing an objective world which exists independently of their own knowledge-producing practices, they have been remarkably unsuccessful in Canada (by their own standards) in describing any "objective" impacts attributable to methylmercury. On the other hand, naturalistic research practices and programs of methylmercury surveillance have played a very important role in constituting methylmercury as a shifting and dangerous object of knowledge for the people researchers label "at risk". Methylmercury, that is, has been materialized, made real, and imbued with significance for the people of Chisasibi in large part by the objectifying practices of epidemiological research and medical surveillance.

Furthermore, it is far from obvious that further objectifying research conceived in terms of the mandate of the Mercury Committee or in terms of epidemiological methodology will be able to produce knowledge which will be meaningful in terms of the concerns of those who are "impacted" and placed "at risk" by mercury and by the Mercury Program Talk about "objective evaluation" of "impacts" upon people "at risk" from

methylmercury poisoning obscures the exercise of power by one group of people upon another and conceals moral contradictions (and the possibility for moral choice) under the guise of rational management. If one recognizes that aspects of technocratic language originate in and conceal contradictions inherent in aspects of social organization, the questions which follow may not be so much of the form "Is there a better language for talking about methylmercury contamination?", but "Is there a more just way of organizing to deal with it?"

Notes:

[1] For other examples of such accounts, see the Globe and Mail, April 23, 1986, sec A, p 3; Sam H Verhovek, "Power Struggle," New York Times Magazine, January 12 1992, and Augusta Dwyer, "The Trouble at Great Whale," Equinox Magazine 61, January/February 1992, pp 29-41

[2] In all, I conducted formal but unstructured interviews with 38 people in Chisasibi, in which I either recorded the interview on tape or took notes of what was said 20 of the people I interviewed were either registered with the Hunting and Trapping Income Security Programme (about which I will say more later in the thesis), or were elders who had previously been full-time hunters See Fieldwork, p 83

[3] Parts per million (ppm) in hair samples 30 ppm is the maximum currently considered acceptable by the Cree Board of Health for everybody except women of childbearing age, for whom the maximum acceptable level has been set at 15 ppm Above these levels, individuals are counselled to decrease their consumption of fish, especially of piscivorous (fish eating) species

Equivalence between mercury hair and blood levels can be calculated according to an empirical equation

$$Hg_{hair}\ (ppm) = Hg_{blood}/\ 3\ (ppm)$$ (Wheatley 1979)

Since it is commonplace in the clinical research on mercury contamination to use this equation, I will take this equivalence for granted and write, whenever practical, in terms of blood level equivalents For example, the blood level equivalents for the Cree Health Board Mercury Program standards would be 90 ppb and 45 ppb respectively

[4] I use 'class' throughout this paper to describe groups of people who share a common relationship to a given mode of production

[5] The Cree Trappers Association is one of the corporate bodies arising out of the process of negotiating the James Bay Project

[6] For other anthropological accounts of sickness in which the relationship of moral knowledge to medical knowledge is a central concern, see Taussig (1980) and Ong (1988)

[7] Young (1981a) provides a review of the development of some of these ideas by Vygotsky, Needham and Hallpike in relation to anthropology Lakoff (1987, esp Part I) contains a review of developments in linguistics along these lines

[8] See Sperber (1985a, 1985b)

[9] The inclusion of Northern Québec in the title of the Agreement was a point insisted on by Inuit signatories, most of whom do not live on the James Bay coast (Allan Penn, personal communication)

[10] August 1990, May to September 1991, June to September and December of 1992

[11] For an account of Cree narratives concerning reciprocity as a moral ideal and a cultural ideology influencing Cree-white relations see Scott (1983)

[12] The problem of defining Cree ethnicity has been resolved for bureaucratic purposes in James Bay by attributing it to those listed as Beneficiaries under the Agreement designated by the Local Enrolment Committees in accordance with Section 3 of the James Bay Agreement

[13] My use of the term 'Cree' here is partly anachronistic, since it was not used to describe the people along the Eastern coast of James Bay until the mid-nineteenth century, when missionaries introduced the term (Francis & Morantz 1983: 11) I use it throughout my discussion for the sake of simplicity

[14] 'chisa'-big, 'sipi'-river

[15] 'Made Beaver' refers to a standard of trade based on a prime beaver pelt that had been prepared either by scraping and greasing (which produced furs called 'coat beaver' once the long guard hairs dropped out after prolonged wear) or by sun-drying (so called 'parchment beaver') (Francis & Morantz 1983 9)

[16] The situation is in many ways comparable to the relationship between Newfoundland fishermen in the mercantile fish trade up to the early 20th century See Sider 1986

[17] See Black-Rogers (1985) for a discussion of the semantics of "starving" in relation to archival and oral history sources about the fur trade

[18] For a discussion of some of the problems with the historical analysis of 'dependency' see Morantz (1980), Francis & Morantz (1983 167-71), Krech (1985)

19 'Coasters' or 'homeguard' Cree were distinguished by the Company from those who hunted and trapped farther inland The distinction between *wunebeyk uyuu* (salt-water people) and *nohcmuc uyuu* (bush people) is also made by the Cree In the early 20th century, this distinction divided the band, in effect, into moieties which tended to be endogamous (Tanner 1978 148)

20 The priests came to the community at the urging of Revillon Frères - a trading company, not a monastic order - which had established itself in competition with the Hudson's Bay Company in 1902

21 The literature dealing with the relationship of disease to American Indian population decline and social organization is extensive See, for example, Ashburn (1947), Crosby (1972, 1986), McNeill (1976), Kreech (1978), Dobyns (1983) Thornton (1987)

22 In 1942 there were 20 births and 27 deaths, and in 1946 there were 29 births and 35 deaths, this at a time when the total population of the community was approximately 700 Desy records one person having died of starvation in 1950, and as late as the winter of 1956 57 12 people died in an influenza epidemic

23 Desy provides annual birth and death figures from 1940 to 1965, and it is possible to deduce emigration rates from these

Population Change in Fort George: 1940-1965

Year	Population	Change	Births	Deaths	Births-Deaths	Emigration previous decade
1940	729	-	-	-	-	-
1950	684	-45	279	157	122	167
1960	900	216	334	103	231	15
1965	1,179	279	317	57	260	-1

24 Canadian Sovereignty over Hudson's Bay Company lands has been asserted since Canada purchased Rupert's Land from the Hudson's Bay Company in 1870, and these lands were incorporated into Canada as northern territories In 1890, the federal and provincial governments began discussions aimed at division of the lands for transfer to the provinces, and this transfer was enacted by the Boundaries Extension Acts of 1896 and 1912

25 See Salisbury (1977), La Rusic (1979), Feit (1979, 1980 1985, 1986), Diamond (1985), Vincent & Bowers (1988) A modified version of La Rusic's chronology of events is appended to the thesis (Appendix A)

26 For critiques of the process see Trudel (1982) & Simard (1980) For defences of the consultants' role see Salisbury (1983) and Feit (1985)

27 These included subcommittees dealing with (1) modifications to the Project; (2) the elaboration of a system to manage animal resources (subcommittee on hunting, fishing and trapping), (3) the selection and definition of régimes under which they would be held, (4) environmental and social protection procedures, (5) potential regimes for regional and local government, (6) economic development, (7) the creation of legal bodie and the study of constitutional problems; (8) police and the administration of justice, (9) health; (10) education, (11) taxes and compensation Study groups dealt with (1) water levels on the Eastmain River; (2) the elaboration of research to establish the current level of animal harvest by the Cree, (3) the design of a system of income security for Cree hunters and trappers (Larusic et al 1973, p 16)

28 The total amount for Cree and Inuit was $150 million, plus an additional $75 million to be paid later for "future development " Of these amounts, about 60% went to the Cree and 40% to the Inuit, proportionate to population (See J B A , Section 25, also Salisbury 1985, pp 102-104)

29 La Complexe La Grande is the first (and by 1991, the only) hydroelectric complex of the James Bay Project to be constructed The other major complexes the Energy Society plans to build for Hydro-Québec include the Great Whale River and Nottaway-Broadback River complexes.

30 "Eeyou" is Cree for 'person', and in modern use refers to persons of native ancestry

31 This amounts to an annual rate of growth of 16 68%

32 This list is taken from Kurland et al (1960 271) Similar lists are contained in Tsubaki et al (1977), Shephard (1976), Wheatley et al (1979), McGill Methylmercury Study (1980).

33 For example see Smith's (1975) photoessay on Minamata, many photos of which were reproduced in Life magazine

34 This connection was not established until 1985, when the surveillance of mercury levels in fish by *La Société d'Énergie de Baie James* (the Québec provincial government responsible for the construction of the hydro project) revealed 3-5 fold increases in the levels of methylmercury in fish in the hydro-electric reservoirs.

35 Chapter 4 deals with the problem of producing authoritative knowledge about biological injury, and I shall not deal closely with this problem here

36 I will not go into the way this level was established However, it is worth noting that there was considerable controversy in the United States when the level there was fixed at 0 5 ppm It turned out that a significant proportion of commercially caught tuna exceeded this, and after hearings before the Food and Drug Administration in which the tuna industry contested the grounds on which the level had been fixed at 0 5 ppm, the allowable level of mercury in fish for sale in the United States was raised to 1 0 ppm

37 Comprehensive accounts of the methylmercury controversy in Grassy Narrows and White Dog are contained in Shkilnyk (1985) and D'Itri & D'Itri (1977) La Rusic et al (1972) contains a description of the problem in Waswanipi

38 Responsibility for health services to the reserves is to some extent delegated to *MSB* by virtue of the Indian Act - Indian Health Regulations Accounts of the development of Canadian government health bureaucracy in relation to aboriginal peoples is contained in Graham-Cumming (1967), Young (1984), and O'Neil (1984, 1986)

39 The Ontario government appointed The Provincial Interdepartmental Task Force on Mercury in 1972, The Federal Task Force on Organic Mercury in the Environment was named by the Canadian government in 1973, and Québec formed *Le Comité d'Étude et d'Intervention sur le Mercure au Quebec* in 1975 Other high-level committees which were formed included the Federal Standing Committee on Mercury in the Environment, the joint Ontario-Canada Mercury Committee, and the Royal Commission on the Northern Environment

40 The National Indian Brotherhood was eventually renamed in the 1980's as the Assembly of First Nations

41 This later gave rise to the McGill Methylmercury Study, about which I say more in the next Chapter

42 See also Kuhn (1977 322) who lists "accuracy, consistency, scope, simplicity and fruitfulness" as scientific values

43 Collins (1985 29-49) contains a sociological discussion of the problem of replicating experimental results

44 Cambrosio & Keating (1992 369) contains a succinct statement of this problem

45 These include

1) The strength of an association
2) The consistency of an association
3) The specificity of an association
4) The temporal characteristics of the association
5) The presence of a dose-response relationship
6) Plausibility according to current biological knowledge (though he argued that this was not strictly necessary, as long as it did not seriously conflict with available knowledge - see number 7)
7) Coherence with current scientific knowledge
8) Consistency with experimental evidence if available
9) Consistency with analogous situations

46 Conversely, this positivist assumption, when applied to moral philosophy, led to the dogmatic assertion that any attempt to deduce ethical propositions from non-ethical ones constituted a "naturalistic fallacy" (see Frankena 1939)

47 Attributed to Nietzsche in Barthes 1967

48 This, and the equivalent French-Canadian term "autochtones" (from the soil), are used to distinguish a heterogenous collection of populations distinguished from the rest of the people in Canada on racial, ethnic and political grounds What these populations have in common is that they all claim descent from populations present prior to the arrival of Europeans in the 15th, 16th and 17th centuries

49 552 ppb. See below, p 85 for a discussion of the meaning of mercury blood levels

[50] Latour & Woolgar (1986 75-85) describe the way statements about scientific entities in a laboratory are transformed from "artefact like status" to "fact-like status" through the gradual elimination of modalities Modalities are aspects of a statement which identify it as being about statements (so and so said the sky is blue) rather than about the world (the sky is blue)

[51] Funding for this study was transferred from Grassy Narrows in the course of a struggle between the band councils and the provincial government over the closure of the contaminated rivers (see above p 86)

[52] (1) Skin sensation is examined by touching the patient's exposed extremities with a wisp of cotton The examiner asks him to indicate when he feels the touch Then he touches the patient's extremities lightly, alternating between a sharp pin and a dull object, asking the patient to respond by saying "sharp" or "dull", depending on what he feels (2) **Vibration sensation** is assessed by touching the patient's extremities with a tuning fork (3) **Joint position sense** is evaluated by asking the patient, with his eyes closed, to indicate the direction in which an examiner manipulates a particular joint (usually the large toe) (4) **Two-point discrimination** is tested using a sharp pair of callipers applied lightly to the patient's skin The distance between the two points is gradually diminished until the patient says that he can no longer distinguish between the two (5) **Visual fields** are tested "by confrontation", that is by the examiner positioning himself directly in front of the patient, so that the visual fields of examiner and patient are superimposed upon each other The examiner extends his arms out to the sides, and holds his hands midway between himself and the patient Moving first one hand and then the other at various points within the visual field he now shares with the patient, he asks the patient to indicate when he sees the examiner's fingers moving In this way, the examiner tests the patient's visual field by comparing them with his own, which he assumes to be normal Further refinement of this examination is possible using a testing apparatus in which a grid of lights is placed before the patient As they are illuminated in random sequence, he is asked to indicate that he has seen them The position of the lights which are visible to the patient are marked down and give rise to a map of his visual field (6) **Hearing** is tested using several more-or-less standard sounds a ticking watch, the rubbing together of two fingers, and a tuning fork Each in turn is slowly brought closer to the patient's ear, and he is asked to indicate to the examiner the point at which he hears them The tests of "spino-cerebellar function" are similarly simple tests of various aspects of movement The examiner evaluates the patient's speech for apparent clumsiness of the facial muscles and tongue The patient is asked to walk across the room, to stand with his feet together then to close his eyes while standing, to move a finger on each hand back and forth between his nose and a finger held out by the examiner, to perform stereotypical rapid alternating movements with his hands and to slide the heel of his foot along the foot and shin of the other leg, and so on The examiner tests the strength of several muscle groups by asking the patient to oppose certain passive movements initiated by the examiner Finally, the examiner tests for the presence of normal reflexes and the absence of several pathological ones

[53] "An inscription device is any item of apparatus or particular configuration of such items which can transform a material substance into a figure or diagram which is directly usable by one of the members of the office space" (Latour & Woolgar 1986 51).

[54] Roughly, the study reported finding an association between mild neurological symptoms and mercury blood and hair levels which was statistically significant in the community of Mistassini, but not in Great Whale The study of findings in children found a statistically significant association between a single finding - diminished tendon reflexes - which was clinically significant only in boys Both studies contained provisos against drawing hard conclusions from the studies In particular, the point was stressed that "the data do not permit the estimation of a threshold of methylmercury above which an excess of neurological abnormality might occur (McKeown-Eyssen & Ruedy 1983 468).

[55] Based on figures derived from the Native Harvesting Research Committee data prepared in the context of litigation and negotiations leading up to the signing of the James Bay Agreement

[56] This is equivalent to 30 ppb in blood

[57] Equivalent to 200 ppb in blood

Appendix A

Chronology of Events

Time	Event
1953	Minamata: First patients with unexplained constellation of neurological symptoms admitted to Minamata Factory Hospital.
1961	Methylmercury identified as causative agent of 'Minamata Disease'.
1962	Dryden Chemical Company builds chlor-alkali plant on the English-Wabigoon River in north-western Ontario. Between 1962 and 1975 the plant discharges 20,000 pounds of inorganic mercury into the river.
1965	Epidemic of 'Minamata Disease' at Niigata, Japan Total 1419 cases, 187 deaths attributed to consumption of methylmercury contaminated fish in Minamata and Niigata
1966	Domtar Pulp and Paper builds chlor-alkali plant at Matagami, Lac Quevillon, in southern James Bay region, Québec Between 1967 and 1978 releases 14,000 pounds of inorganic mercury into Nottaway Broadback river system.
1967	Documentation of high methylmercury levels in fish in Sweden leads Swedish government to ban the use of organomercury compounds in agriculture and industry.
1967-68	Norwegian graduate student (Fimreite) documents high levels of methylmercury in fish in Saskatchewan and St Clair rivers adjacent to chlor-alkali plants.
1969	Swedish researchers demonstrate that microbial activity in lake and river bottom sediments leads to biomethylation of inorganic mercury
1970	Federal Department of Fisheries documents high levels of methylmercury in fish of the English-Wabigoon river system in Ontario and the Nottaway-Broadback system in Québec. Both systems are closed to commercial fishing.
1971	Premier Robert Bourassa of Québec announces plans for the James Bay Hydro-electric Project. The Québec National Assembly passes legislation constituting the Societé d'Énergie de Baie James (SEBJ).
	Medical Services Branch of National Health and Welfare (MSB) tests blood samples of Ojibway residents of Grassy Narrows and White Dog reserves in NW Ontario and of Waswanipi and Mistassini Cree in Québec. Many in both Québec and Ontario found to have levels above the WHO standard.
	Four Waswanipi Cree with elevated blood levels are referred to the Montreal Neurological Institute for clinical examination - said by MSB to reveal no evidence of mercury intoxication.
	MSB advises Cree not to eat fish because of mercury contamination.

1973 Six Ojibway from Grassy Narrows and Whitedog with elevated blood mercury levels are admitted to Winnipeg General Hospital for clinical examination. Said to reveal no evidence of mercury intoxication.

In Québec Superior Court, Cree win interlocutory injunction against hydro-electric development. It is overturned one week later by the Québec Court of Appeals. Cree chiefs agree to enter into negotiations with the government of Québec regarding development.

SEBJ begins construction of the LG2 hydro-electric complex on the La Grande River

1974 Cree chiefs form the "Grand Council of the Crees (of Québec)" (GCCQ).

1975 First resident physician at Grassy Narrows states that at least 10 people in the community have clinical signs and symptoms of methylmercury toxicity Japanese physicians from Minamata visit Grassy Narrows and Whitedog at the request of the National Indian Brotherhood, and conduct clinical examinations. Claims many residents have neurological symptoms which are characteristic of methylmercury poisoning, but may be due to other factors. Calls for controlled epidemiological study to detect illness due to methylmercury.

MSB extends methylmercury surveillance program to all of the Indian reserves across Canada.

The GCCQ, Hydro-Québec, SEBJ and the governments of Canada and Québec sign the James Bay and Northern Québec Agreement. In exchange for financial compensation and the right to establish a Cree regional government, the Cree agree to surrender claims to certain land rights and agree to the construction of the La Grande Hydro-electric Complex. Among the many administrative bodies formed by this agreement are the Cree Regional Authority (CRA) and the Cree Board of Health and Social Services (CBHSS).

The Québec government appoints the Comité d'étude et d'intervention sur le mercure au Québec.

1976 MSB arranges for a Canadian neurologist to conduct a clinical survey in Grassy Narrows and White Dog. He claims that 10 individuals have symptoms which could conceivably be due to methylmercury, but might also be due to other causes. He calls for an epidemiological study to settle the question.

In Québec, the Comité concludes that "plusieurs individus résidant dans le Nord-Ouest québécois montrent des signes objectifs d'intoxication neurologique par le mercure organique." Calls for a complete ban on the discharge of mercury into the environment and for an extensive program of medical and environmental and medical surveillance in the region affected.

The Cree Board of Health and Social Services assumes responsibility for the MSB Mercury Program in the James Bay Region.

1977 The Grassy Narrows and Whitedog bands refuse to accept the government's epidemiological study unless the Ontario government declares the English-Wabigoon river closed to sports fishing as well as commercial fishing. The federal government offers funding for the study to the CBHSS and the CRA. Researchers at McGill University are engaged to conduct the McGill Methylmercury Study in the James Bay Region. Construction of LG2 nears completion.

CBHSS takes over responsibility for the operation of hospitals and nursing stations in the James Bay region from the federal and provincial governments.

1978 A team of neurologists, paediatricians, ophthalmologists, physicians, and Cree assistants and interpreters conduct clinical interviews and examinations in Waswanipi, Mistassini, Chisasibi and Great Whale.

1980 McGill Methylmercury Study published. Reports a "significant positive association" between neurological abnormalities and methyl mercury exposure in one of four communities (Mistassini), but "it remains possible that the effects are not entirely attributable to methylmercury." Study of prenatal exposure to methylmercury reports correlation of mildly abnormal muscle tone and tendon reflexes with methylmercury exposure, but correlation said to be interpretable only by "continued surveillance."

Negotiations on the second phase of hydro-electric development, the Great Whale River complex, begin.

1983 Four-to-five-fold increases in methylmercury in fish of the La Grande watershed are noted between 1978-83.

1984 CBHSS extends its program of methylmercury surveillance to Chisasibi.

Hydro-Québec begins negotiations with the Grand Council to build additional hydroelectric turbines (LG2a) and a transmission line. The La Grande Agreement, which settles these issues is negotiated at the same table as the Mercury Agreement.

1986 The La Grande Agreement and the Mercury Agreement are signed, and the Mercury Committee is formed.

Appendix B

Comparison of Cash Economies: Fort George 1972 & Chisasibi 1989

a) Per Capita and Family Incomes:[1]

	Fort George 1972	Chisasibi 1989
Population	1,289	2,499
Average Family Size	4.8	3.0
Income per capita	$1,190	$10,400
Income per family	$5,712	$25,526

b) Income by Source:

Fort George 1972			Chisasibi 1989		
		%			%
Transfer payments	$256,360	17	Transfer payments	$3,971,101	19
			Income Security Program	$3,196,427	15
Schools, mission, hospital	$592,000	38	Cree entities	$8,427,988	40
Band	$216,100	14	Band	$1,858,465	09
Other	$478,600	31	Other	$3,811,783	18
Total	$1,543,060	100	Total	$21,265,764	101

1. Figures for Fort George taken from Hyman & Hyman (1972), for Chisasibi from Hawkins (1990) Dollar amounts are not adjusted for inflation

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Epilogue:
Conversations with People "At Risk"

Epilogue: Conversations with People "At Risk"

When I began my fieldwork I thought of my task in terms of trying to understand what the people in Chisasibi said or believed about methylmercury contamination. I duly arranged a series of interviews with hunters and trappers and their wives designated "at risk" of methylmercury contamination by the Mercury Program. However, I became increasingly concerned that I might find myself claiming to speak on behalf of people who had already been too often represented by outside "experts" of one sort or another. At the same time I could find no firm standpoint from which I might coherently manage to represent in summary form the wide variety of narratives, opinions and attitudes about mercury which might be said to be contained in what people told me related to mercury. Epistemological and moral problems of representation confronted me together, and I could resolve neither without simultaneously resolving the other. Gradually the focus of my thesis shifted from trying to interpret utterances about methylmercury to trying to understand and account for the relationship of medical knowledge about methylmercury to its socio-political context. Here the ground seemed a little firmer.

However, some of the people who consented to talk to me did so on the understanding that what they had to say would somehow be taken into account, and that their views would be aired in the course of my work. That what they told me did much to reorient my approach to the thesis does not seem to fulfil this understanding adequately.

This epilogue then, consists of transcripts of interviews I conducted in the summer of 1991. I have edited the transcripts only slightly to eliminate those passages which, in my judgement, bear not even indirectly on the problem of methylmercury contamination.

A note on format: my own questions or statements are rendered in italics, and the statements of the people interviewed in standard print. Most of the interviews were conducted through a paid translator, who was in some cases a close relative of the people being interviewed, and in such cases often was also a participant in the conversation. Pauses for translation are indicated by blank lines in the text.

Philip Cox

Thankyou very much for talking with me. .. I guess I should maybe just explain what it is I'm doing. Basically I've been talking to different people to get as many different perspectives as possible.

It's much better like this, he said. It's much better he said, if you're writing about this, that you interview so many people and put everything together.

I understand a lot of his trapline was flooded.

That's true. he can't go hunting there anymore.

Where was his trapline?

LG-4.

How much of it is left?

Just a little bit of land. That's all. Just a few little islands around. Something

Does he feel that the mercury has had a big effect on his life? changed his life much?

Yes. Big change. He only went hunting there one year after they flooded the land. Since he heard about the mercury, he stopped going fishing.

So he doesn't fish any more at all.

Since 5 or 6 years. It's a big problem. ...

Does he hunt anymore?

He still goes hunting for nine months ... like lynx, fox and beaver.

Where does he hunt now?

Well, he still goes hunting on his grounds.

So, does he eat fish at all anymore.

He eats fish when he buys them from the south coast.

So he buys them?

Last week he bought fish coming from Waswanipi.

But he never goes fishing himself.

No. He's got some nets downstairs, but he never uses them.

Did he used to do a lot of fishing?

Just before ...

How much time does he stay on the land now?

He only comes back for Christmas holidays. Then he goes back after. Then he goes back again for the Goose hunting.

I'm not sure I understood. He said before that he only went hunting one year on his land. Does he go somewhere else now?

He goes back there. I guess there's only a bit of land left.

Can he tell me ... I wonder if you remember how you first heard about the mercury.

He heard about it since he flooded the land. But he ... After he heard the news about the mercury. He asked some questions to the doctor. The doctor told him that he already knew that the mercury existed. Even before they flooded the dam That's what the doctor told him. But nobody knew that

Which doctor was that?

That Dr. Dumont [the internist who is in charge of the Mercury Program]. He saw him at the commercial centre when he was giving out pamphlets. That's when he asked him the question.

When he first heard about the mercury, what was he told?

He's talking about nemabi [sucker]. When they first heard it, people were told not to eat too much fish except nemabi. ... He said he didn't like too much that fish because it's got too many bones. He's scared to eat it because it might get stuck in his throat.

What was he told might happen if he ate too much fish?

He thinks that if he was eating a lot of fish, he would die from mercury. Because people say different things about the mercury. .. He's wondering why the . white people at LG-2? He heard that they have mercury too, but they don't try to find out, you know, like they're doing for the Indians. And they're also allowed to eat fish as much as they want. Like today, there are so many white men coming here to go fishing That's why it's so hard for the Indians to go fishing Because they're not allowed to eat fish. The white man's got privileges to go fishing He's wondering why.

Today, he says, there's no Indians going fishing anymore It's only the white man. Now he's talking about fish If somebody told him that a man was sick, he wouldn't eat it at all. Like the fish got mercury, he doesn't eat it anymore.

Now he's only got a level of 19 [ppb in hair samples] because he doesn't eat too much fish and he buys it from the Coop. Sometimes he asks people who fish, people he knows, the people going fishing in the south.

How often does he eat fish? How many times a week does he eat fish?

He only had one fish. He bought two fishes from Waswanipi. That was two weeks ago. Even though he's not eating too much fish. He's still got a level of 19, and he's got mercury. The people, you know, they're talking about different stories about mercury. It's not all the same information

Would he mind telling me some of these different stories?

He said the doctor told the Indians not to eat fish, but he wonders why he doesn't tell that to the white man coming here. There are thousands coming every summer to eat fish. They told him that the white man who's got mercury - they're doing everything for him in Montreal. That's what the doctor told him.

That they're doing everything ...

They're probably getting the same tests as the Indians, like taking a few strands of hair. He even asked the doctor if it works, if it really works what they're doing - taking the strand of hair for examination. The doctor told him ... 'I think it's working'.

What does he think they do with the hair?

He never asked the doctor what they're doing, but he thinks that that's why they find out the people with mercury. Even though he doesn't eat too much fish, he still gets a level of 19 on the test.

He wanted to know what you were doing. I said you were writing a history.

I could maybe try to explain ... it seems that people have a different perspective about mercury, and it's changed over the years, so I'm talking to as many people as I can - doctors, health workers, most importantly the hunters and trappers - to try to bring together all of these different perspectives and by bringing everything together that it may be easier for the doctors and researchers to understand what the hunters are concerned about and maybe for the hunters to understand what's going on with the research. Maybe that way they can make some suggestions ... I think there's lots of different kinds of knowledge that people have about mercury. I think that the hunters and trappers know about what's happening to the fish, to the river, maybe about what's happening to themselves, that the researchers and doctors don't know about.

He was talking about the mercury. He asked the doctor about the mercury the fish have today. He said he takes fish from the south, you know, going along the coast. And he asked the doctor if the fish in the salt water could have it too, and the doctor told him that it could be possible, but not too much. That the worst part is here between LG-2 and LG-3. That's the worst part.

Does he see much change in the fish since the dam has been built?

Yes. He's talking about the sturgeon again. It doesn't exist anymore

It doesn't exist in the river?

Yes. It has disappeared.

I heard somebody went looking for the sturgeon. Does he know anything about that.

Yes. Yes. He's a member of that association the Cree Trappers. He knows about that. Close to LG-3 they looked for that sturgeon, and they only killed one. They just killed one to find out what's happened to it.

How do they fish that sturgeon? - by nets?

Yes. By nets.

The sturgeon, he feeds on the bottom?

Yes. He gets it from the bottom, the food which stays down. He doesn't eat other fish. He eats plants.

They told him that from LG-4 and beyond, before, they told him that there was no more mercury in the fish, way up to Kanapscow

Who told him that?

They get information from the hospital. That's why he said he's heard different stories and he's wondering why.

So they say it's OK to fish beyond LG-4.

Yes, but nobody's going there because they don't believe it.

Why?

Because of the different stories.

There's people want to go fishing, they rent the plane, and they go fishing far away from the river to different lakes. They go fishing in Julian Lake. There's another lake - Wawa Lake.

And those are OK? .. When they first built the dam, did he see much change in the fish around his territory?

Two years after they flooded the land in different lakes, the pike looked so nice outside, the fish. But some of them looked so different. They were long and skinny

So some of them looked nice and fat. Some of them looked skinny. Did he say anything else?

He was talking about the different lakes they flood, all of the fish went together there. They went all over the place. ..

He thinks that after they flooded the lakes and the land, the fish couldn't find anything to eat, so they started to eat the earth. Maybe that's why they got sick He thinks that the dust landed on the ground. He thinks when they flooded the land, the earth went down and covered the food they were eating before. It covered everything. That's why the fish started to eat anything, and he thinks that's how they got mercury because they're eating that food they never had before.

Did he notice any change in the taste of the fish?

The fish he tasted - the ones in the lake, after the flooding. He could taste the earth that the fish were eating.

How about the oiliness of the fish? Did that change at all?

He said they went fishing there, about a mile and a half from the west of the river. That's where they found fish which tasted like oil He's talking about the oil that was spilled on the river.

Where was the oil from?

People that were building the roads. They spilled it from the trucks or helicopter

Does that river drain lakes which were flooded too?

Probably people didn't take care of what they were doing They probably spilt it on the road and then it was raining and it drained itself in the rivers.

Does he see much difference in the water since the dam?

Yes. He said there's a difference in the water, because you know when they flooded the land, they had different lakes, apart. Different parts of the earth went in the water, so everything was mixed all in together. That's why it's like this, that's why it's different.

What does he see?

The water is black and shiny, just like tea, or like a swamp. Now he's talking about different logs that went in different lakes. In some lakes, the water is black, some

lakes look yellow and brownish colours The swamp comes in that too. The water from the swamp is dirty too, it stinks. Everything mixed together.

He mentioned poison there?

He's talking about the swamps - he mentioned poison - that's the water coming from there

..

He's heard so many stories about the mercury. Different stories.

Can he tell me some of the different things he's heard?

He doesn't keep track of them. It's hard to keep it in your head too.

Does he feel that the mercury has affected the animals much?

Different animals that we're not allowed to eat because they found out they have mercury in them The loon, the ducks and all that ... the ones that are eating fish - the bear, even the otter and the mink, we're not allowed to eat them. They have mercury too because they were eating fish too.

Does he eat bear anymore?

No, he says he doesn't eat it anymore, because the bear eats the garbage. That's why he doesn't eat it anymore He was watching one time a bear eating garbage - dirty garbage. He even saw the bears eating medicine that the hospital was throwing out - the garbage from the hospital.

Where did he see this? Eating medicines?

They're just there before dark They eat anything they find in the garbage dump. They'll probably die from that, eating poison.

Have you ever killed a bear and found meat which was too bad to eat?

He never killed one, but he heard of people killing bears at the garbage dump, and they were told they could eat it, but when they opened the bear, they saw the colour was green, the meat was green, maybe half an hour after they killed it.

He says he could talk forever about mercury. He has so many things to say. ... He's wondering why they told him that just past LG-4 why they were allowed to eat fish.

... I don't know.

Now he's hearing different stories about the mercury. Sometimes he thinks they just want to scare people about mercury. That's why he himself can't tell you too much about mercury.

.. Does he feel himself that his health has been affected?

He can't tell you because he doesn't know. He can't say even if he gets sick that it's because of mercury. But he wonders why he's got a level of 19 on the test. Even though he is not eating fish, he is wondering why he gets the mercury ... or else. Even the caribou got mercury, even the moose He thinks even the beaver got mercury

Where do they get the mercury?

Probably gets it from the pollution, he said, from the air. The caribou ... He thinks that all the dust, all the pollution that lands on the ground, the caribou eats it, even the beaver he's eating plants, that's why he gets it.

Does he think there's any pollution from the transmission lines?

He doesn't think so because not all of the lines are used yet. He thinks after they've finished everything, it's possible.

How is your health in general?

He can't say that he's healthy because he always has to go to the hospital. He's got to go down to Montreal. On Saturday, he's not allowed to drink anything. He's got to see a doctor.

Does he mind my asking what's wrong with him.

Now he can't tell you because they never told him what was wrong.

But the doctor's coming. Maybe after he will know.

...

How does he feel about the research that's being done?

He's talking about the mercury. He never heard about the mercury before they flooded the land. Nobody ever talked about it.

Did he ever hear about mercury poisoning in other places? Like in Japan?

No.

Is there anything else he would like to say?

No he didn't want to talk about anything else. He just wanted to have some information about mercury. He's wondering why there's no mercury at LG-4 and beyond, but here they've got lots.

Tell him I don't know, but I'll try to find out.

He asked that question of the doctor, and the doctor told him it's all over, even in the small lakes that the fish got mercury. . . The only fish that doesn't have mercury is nemabi, the sucker, but the rest is contaminated. The fish, the sturgeon doesn't eat any of the other fish, only plants under the water. The nemabi doesn't eat other fish too.

Does he ever hear anybody talk about somebody they think might be sick in the community?

A person got sick, somebody said he was sick from the mercury. That's the only thing he ever heard. Like, if somebody is so high on the test, and he is only allowed to eat just a bit of fish twice a week.

Thank you very much for talking ..

He can't eat fish The only fish he could eat is the nemabi. ... Even the caribou is sick and they don't know from what.

Does he still eat caribou?

No. If they tell him the animal is sick ... Ten years he's got his fish nets in the basement.

So when he goes hunting, does he eat the meat from the animals?

From birds and rabbits, yes.

Bear? Caribou?

No. The reason why in the caribou is that they found in his lungs and liver, mindousn, worms.

You could see them?

No, it was the paper, a picture. You could see them inside.

Well thank you very much.

Clifford Pachanos

Clifford Pachanos is in his 50's. Previously registered with the *Income Security Program* as a hunter and trapper, he is now employed by the *Cree Board of Health and Social Services* managing a group home for young people. His family hunting territory is inland. He is the uncle of Eddie Bearskin, who acted as translator.

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Have the dam and the mercury affected your life much?

Our river has been dammed He finds out there's a lot of things happening but he can't tell everything he's seen

If he wanted to say everything he saw, it would take a long time.

First he's going to talk about the mercury, how it affects the environment.

You wanted to know about the cost of the Agreement? He was staying at the reservoir. That's where his trapline is for the winter. That's why he stayed on the reservoir. He wanted to find out about the mercury.

When he first found out about the fish, the fish were very good. They spoke to our people, the leaders. They tried to find out how it would affect them, how it was going to look in the future, how the fish would be in the future.

The dam there - the first reservoir - after 3 years they knew the fish was going down, the fish was poor, the fish was not good.

And the mercury - the people who helped them, the biologists. Because they did the tests on the fish, that's when they knew there was something wrong with the fish.

What they were told about the first reservoir, it was tough because they were out on the water. The fish ate the plants. Then the reservoir came in. If something had been underwater for a long time - rocks, something like that - that's ok for the fish. Then the fish is thin.

Because they live on the stuff that was not underwater before - the fish eat the stuff that was on the land - it was bad, that's what they were told.

The stuff that was not underwater, the fish ate food which it never ate before, it was not meant to eat that stuff, the fish from the reservoir, that's how they get the mercury.

Some of the animals that we ate, like beaver, they drink the water and eat the plants underwater. When we eat the beaver, that's how some of us get the mercury, and that's how the other species get the mercury.

The otter, muskrat, we eat those things. That's how we get the mercury.

And also from the birds who eat fish, and the other kinds of ducks that don't eat the fish, I guess they get it from the water, and also the loon.
And the birds, the ducks, that eat the plants, the grass, when they eat the grass, they drink the water at the same time. That's how the ducks get the mercury.

And also the birds, the ducks, that we don't know - they're coming from the reservoir, and when they do come, they give it to the other lakes, which are not under the water. There's nothing to tell us that this bird is coming from the reservoir, and we think that the geese are always staying on the same area, that's how he gets the mercury.

And the birds, they fly so fast from one place to another, when you go out in the bush, and eat the birds, they don't know if this bird has the mercury.

The mercury, sometimes the birds, they are staying on the lakes, and there we don't have the equipment to do the tests to know if this species has the mercury, we can't test them. And we don't know which places they come from. By looking at these species, sometimes we see some kind of sickness coming from the meat. Sometimes this bird is really skinny, no fat. That's how we know this bird is sick.

These birds or animals, they find them dead in this area. They know these birds are sick. If they pick up the bird, they won't eat it, they burn it.

Even the big game, sometimes they eat the plants along the shore, even along the road. You see big game along the shore, they try to do the same thing they do along the lakes, they try to eat the water plants in the summer. That's how we know they have the mercury. During the winter, they still eat from the reservoir.

The caribou and the bear, they don't eat from underwater. They are going across to land, they swim. When they swim, that's when they drink the water, swallow the water. That's how they get their mercury.

They used to find the bears and the caribous, they're laying around in the bushes. When we find them, we burn the caribou and the bear. And this spring, we killed a bear which we
couldn't eat. We had to burn the bear.

Why couldn't they eat the bear.

[Eddie] Because they had the sickness from it. [Asks Clifford and translates.] They killed the bear somewhere around LG-3. The reservoir's really close to the road. The reason why they couldn't eat the bear - it was really skinny, it had no fat on the bear. They knew the bear had sickness.

He was driving around the reservoir in the wintertime, and he found the caribou laying around dead, and he had no cause of this, nothing. The crows found the caribou. They ate the caribou. From the experience, he knew there was something wrong with the caribou. The caribou was really, really skinny. He thought it was because of the dam, the caribou from the reservoir.

When the migration of the caribou, it comes from the east. There are people who are staying in the bush, these Cree people, they never mention the caribou that's dead. Around here - Chisasibi, this area - we see a lot of caribou lying around dead.

During the migration, at the reservoir at each dam, they swim across. They land on the shore, they have a smell, flushed on their bodies and on their fur. When they are swimming, they drink the water. We never see any caribou inland that's laying around. When they reached around this area, that's when we see these caribous laying around dead, caused by the mercury.

Those species, like small game, small animals, fox, all those who wander around in the woods, in the reservoir, they were never told that they had done these tests for mercury on them.

They don't think that these animals, the caribou, they don't know if they have mercury in them.

For the fish, the Hydro told us that the fish would be very fat. They didn't tell us that they fish would get skinnier and get killed by the mercury.

The Hydro, they had to know about the mercury, but they only said that the fish would be very good. Then there were biologists, they were the ones who were doing the tests. These people, they all just told us that we couldn't eat the fish from the reservoir. But Hydro told us that the fish was really really good. Us, they tried to make us happy, and they didn't want to say anything.

The fish is all dying from when they opened these doors for the dam. These fish gets killed from the fast water. You can see them lying around on the shore. Nothing has been done to take them from the water, burn them. The water gets dirtier and dirtier.

He's seen this once, from his own eyes, we were working at the LG-3, slashing for the Hydro. Far away from the doors the fish were lying around on the shore, and every time they opened the doors, the fish comes in the water, every time. The Hydro, they didn't clean up the area. Those fish that were on the water, they opened the doors, the water gets dirtier, and it goes everywhere.

And those fish that are living now in the water, the mercury, it grows, from the fish that are already there, the newborn fish.

The newborns get it from the ones that are dead?

Yeah.

And the Hydro didn't tell us about the turbines - the water goes in - Hydro doesn't tell us if the fish go through to the turbines. If they go through the turbines, the fish is really destroyed, cut into pieces, that's how the mercury is spread out to the waters.

There's another thing, Hydro doesn't tell us about these explosions that they make in the rocks next to the reservoirs. What's going to happen to the fish, or us when we eat the fish.

[Eddie] One of my friends, he's working at the turbines. Everyday they collect a lot of fish from there, in the turbines. At LG-3, LG-4, everyday, I guess the fish go through the turbines.
When he's talking about the rocks, does he mean the mercury from the rocks gets into the water?

Probably, or the dynamite. What's in the dynamite, is it going to harm us when we eat the ... , when the fish eat this stuff. Let's say the dynamite eh? Somebody throws it in the water. The fish eat this stuff. After we throw the fish away, what's going to happen to us?

The reason he's talking about the blasts, they talked to a guy on the reservoir, and he explained to them about the blasts. The thing that they use for the blasts is a chemical,

which is not right for the animals to eat, or the fish, or even us when we drink the water from the reservoir.

There's another thing they didn't tell us, when they built the dam, about what's going to happen when they finished the dam, if it's going to break. They told us how it's going to happen if the dam breaks. Like this town, this whole town won't survive. Unexplained things.

I know a lot of things now since the dam's built. Wherever the whiteman lives, where he is now, people used to hunt on the river. And today, sometimes, the people, they lost the tools they used for the hunting, and like this is for the skidoo, motor, boat, the gun. Like, some of the people, what they do is ... [consults] .. sometimes, the people, what they do is, where their cabin is, their house, for instance like us at the LG-3? We don't take anything from here. We left our supplies there, we used to. We only had the groceries and the lunch. We only take that to the LG-3. And sometimes we use that trike. We lost everything, the snowshoes ... We don't know who took it, but we know. The Hydro, the workers took those things. Even when we talk to the police at the LG-3, they don't believe us when we talk. We try to convince them that it's been stolen. Sometimes they say: "The other Indians might have used it, took it.' Us, we don't steal things from each other.

We lost something. We came here to be secure. The CTA talked to the Hydro people. What we lost we asked them to repay. It takes about 10, 20 years to come up with the solution from the Hydro. Like I said, when our tent was burned down, 18 years it's been burned down ... [consults] ... It was March, ... March 1981. Today's '91. March '91, that's when we received the money from the Hydro. Cause they didn't believe us when we told them.

The stuff that we lost. We had to replace that from our own pockets. When we get the cheque, we don't get the full amount of what the thing costs, we only get about half.

We lost the boat at the reservoir, close to LG-3. I don't know how much it cost. In '80, the full amount of the boat was about 600 dollars. It seems to me that they only paid about ten percent of these things that we lost.

Another thing is, where they work, like around LG-3 or LG 4. These camps, are really far off the road, sometimes, a hundred kilometres off the road. These workers, when they go fishing, they use a plane, and when they see a camp, they land and they look for something they like ... and they take it. We go there, and we try to use it and it's gone.

The camps off the road, when they go in, it's break and entry, eh, when they break the window. Sometimes they break the door lock, the padlocks, they don't even close the door when they go out. Sometimes it's really messy inside the house.

Still, when we build a cabin at LG-2, close to the LG-3 reservoir, that's where we used to go to our hunting ground, trapping. He went there on Monday, at the cabin. The padlock was broken. They had raised the screws. Somebody was sleeping inside the cabin, some of the plates, dishes, and cooking ware were missing. The coat was hanging there doesn't belong to him. That's from the Hydro.

Since he started working in Baie James, since then, we know he's been doing these things.

He doesn't want us to hunt in the camp where he works. He's using the police to tell us not to hunt there He [Clifford] killed a beaver once, at LG-3, not far from the gas station, [a distance] from here just to the hospital. This beaver was almost dying. It was dying. If he didn't shoot the beaver, it would die right there. It didn't have a home, a place to stay, only on the water. He [Clifford] almost went to jail for that at LG-3.

Why was the

Because we're not supposed to hunt near the working areas. It's like this. We're not supposed to hunt, that's what they told us. But in the Agreement, it says we're supposed to hunt everywhere That's in the Agreement. If the beaver had died, what were they supposed to do with the beaver? Throw it in the garbage? They wouldn't even know the way to the Crees

And the reason he killed the beaver, it's not his hunting area. He wanted to kill the beaver to give the skin, the fur to the owner of the land. And if he hadn't done that, the beaver would die right there. The owner would have lost about a hundred dollars if the beaver died right there. He couldn't go to his hunting ground, and the cops were blocking there the road block.

So the other guy couldn't get to his own hunting ground?

No, him [Clifford].

Why were the cops blocking the road to his hunting ground?

The reason was, because he shot the beaver right there. That was the reason why.

He shot the beaver. He didn't wear any hip waders to take the beaver alive, so he shot him with a .22.

And they're still doing the same thing. They're told not to hunt at the LG-3.

The reason why we keep hunting around the LG-3 area, that's where we were brought up, that's where we used to hunt. They got it from their parents. Now they are teaching us how to hunt. And me to [Eddie], I won't stop to hunt at LG-3, at the same place.

There's another thing I don't understand ... about the white people coming up to the north to hunt the caribou. They don't hunt only the caribou, they hunt ... The government sends the white people to hunt the caribou. Why does he hunt in our hunting area. I don't understand it.

And another thing he doesn't understand is, when the hunt, they hunt almost all year round for the caribou. They still kill caribou in April. The natives, they don't kill caribou anymore in March, April, May. They stop at February. Those white guys, they hunt to April. The babies that they [the caribou] are carrying, they are killing them.

The reason why we stop hunting in March, is to prevent killing these newborns, so they can be used again, in next years season. And in November, that's when we start hunting the caribou. He's using everything on the caribou. He doesn't throw away the parts.

I just don't understand the whiteman's plans, the crops, how long they are going to take to grow. It's the same thing for the native people.

He says since the white man is hunting here, he wants to take away our traditional way of hunting, he wants to keep everything for himself, ever since he sends his trucks from down south. They take a lot of caribou meat back down south They want to get rid of our hunting privileges.

There's another thing about the damming. The lakes where the main camp was, there were good fish around the area. We told the government to put the dykes outside of these lakes. He didn't listen to us. It would cost a lot of money he told us to do that. Those lakes are underwater now.

We were told from our parents to look after the lakes for the next generations to come, that's us. They told the government about this, and the Hydro didn't bother listening to the people.

A long time ago before he was born, white people - prospectors, they stayed in the bush. His grandfather told these white people, "If you are really hungry, if you are running out of food, you can always go to this lake." These white guys ran out of food and they moved to that lake where his grandfather told him to go and they put their net. When they returned home, they said they owed their life to that lake, and to his grandfather. That lake is now under water.

When they reached the Chisasibi people, they gave thanks to the people, especially to the old guy, his grandfather. They gave very special thanks to this man. 'If he didn't tell us about the lake, we would have died.'

Now he's talking about the LA-1, a lake called Opwimskau in Cree. This summer they think they're going to let more water in at LA-1. They're going to drain a higher dam. That lake is a very good place to fish.

These people from Great Whale, and Rupert's House - Waskaganish. If they don't stop the Phase II, if they keep on working on the dams, they will have the same problems as we have now.

LG-2, Kaniapscow, all those big reservoirs inland, it's just like an ocean - a huge amount of water inland. When Phase II is finished it will be the same. For the people along the coast, it will seem like they're living on a small island. Those things we used to hunt, they will be far, far away from us. We'll have a hard time going hunting. The Hydro, ready for generations, next and next. Like me when I'm gone. Then it will be Hydro handing out - "here use this to survive". Will there be anything for the next generations.

When we fought for our land, we asked what we would get from the dam. He said, 'We'll give you this, this, and this.' He didn't put it in his head or heart. Why was he lying? The roads, where he worked and took the gravel - we told him not to break the roads When he was finished using the roads, he broke them right away. He didn't listen to us. We could have used them for hunting. If Gt. Whale and Waskaganish, if they can't stop it, then something will happen to them like to us.

The LG-1, that's where the fish are spawning. Before they worked on LG 1, they used to fish there. When they finish LG-1, there'll be more mercury at the LG-1 area. It was a very good place to fish.

Before they worked on LG-1, when working at LG-2, they used to go across the river for their hunting. Some of the people were poor. When they finished LG-1, no one was able

to go across, only by the shore. How dangerous it will be. We don't know if it's going to freeze or getting dry.

That's all I wanted to say. The reason I'm talking about our land and the mercury is to let the Waskaganish and the Great Whale people to know what problems they will face.

When they first heard about the mercury problem, the fish seemed OK, and Cree leaders tried to find out what effect the mercury would have on the fish in the future. They found out there was a problem with the fish through the biologists doing their testing of them. The story they were told went something like this: normally the fish feeds on stuff that has been submerged for a long time, rocks and so on. But after the land was flooded, the fish ate stuff that was on land, things it never ate before, things it was never meant to eat. That's how they got the mercury.

Some animals, like the beaver, eat the plants and drink the water, and get the mercury, which is then passed on to people when they eat the beaver. Same with the otter, muskrat, birds who eat fish, the loon, and ducks whether or not they eat fish. They can get the mercury just by drinking the water, which they take in whenever they eat plants or grass.

It's also possible that the birds and ducks coming from the other reservoirs, give it to the other lakes "which are not under water. There's no way of knowing whether or not a bird is coming from the reservoir, and they can spread it to geese who stay in the same area with them. The birds fly so fast from one place to another that there's no way of knowing whether or not they have mercury. We don't have the equipment to test them, so we have no way of knowing. We don't know where they come from. Sometimes, by looking at the bird, we can see that it is skinny, and has no fat. That way we can tell if they are sick.

The big game, too eat plants along the shore, and along the road, and get mercury.

Sometimes you find sick or dead caribou and bear lying around in the bushes, and we have to burn them. This spring we killed a bear we couldn't eat, and we had to burn it. It was near LG-3, and it was sick, really skinny with no fat. They knew it was sick.

Same thing with the caribou, he was driving around the reservoir and found dead caribou. The crows were eating it, and it was very skinny. He thought it was because of the dam, the caribou was drinking from the reservoir. The caribou migrate from the east, and nobody he knows hunting in that area ever mentions dead caribou. It's only in this area, around Chisasibi, that you find a lot of dead caribou.

George and Elizabeth Snowboy

George and Elizabeth Snowboy are a couple in their late 50's, currently both teachers with the *Traditional Activities Program* of the Cree School Board. Their hunting territory is on the north coast. The interview was conducted in English. In the transcript which follows, the three speakers are identified by different fonts, as follows: *Interviewer*, **George**, Elizabeth.

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Well, basically what I am doing is writing a history of the mercury issue, trying to give a picture of how it developed, since it first become a problem in the early 70s down South, of how it looks to different people at different times, because the knowledge about it has been changing. I think probably the most important perspective on all that is the effect it has had on the people in the community. ... So I guess, I find a good way to start is ... I wonder, do you feel like the dam has affected your life much - did that have much of an effect on you?

Questions like that I cannot answer very much because we already live in a different way than we did before, and different transportation and all that. Originally when we were together we paddled down the coast in the summer and in the winter we travelled by dogs. We were the furthest north of the Indians that came to Chisasibi and at the time I didn't know anything about mercury. I used to know about mercury just to think of the use of it in thermometers and some other kind of ink. ... I don't think mercury has really affected my life.

So you don't think mercury has really affected your life much'

I don't think so, for me anyway.

For me it does, because since the dam, I didn't have any mercury but I had very high levels one time since they built the dam here and they told me not to eat other kinds of fish because of the mercury.

Not to eat the fish from here, that's what they told us. Where we come from [North Coast] it's very low level of mercury.

If we stay here. I'm not supposed to eat other kinds of fish. The ones with lots of mercury. And I used to eat all kinds of fishes, ah. But I really liked the other kinds that they didn't like me to eat.

Pike?

Pike and sucker.

Pike and lake trout.

Lake trout. My mercury was very high.

When was that?

I forgot that. I had a sheet of paper from the hospital but they tested us almost every year. But it's gone down now. [laughter]

I cannot say because I've never checked. They are supposed to tell me if I have mercury.

You were supposed to receive a letter, a report.

They were supposed to tell me that. They were supposed to call me. They were supposed to call me up and tell me what they say.

They sent letters to the persons and then for the results.

And when those letters get there I'm not there, I'm out in the bush.

I guess you didn't receive it, you were too upset. ... Our family take our mail and sometimes they forgot to give it to us while we were in the bush.

You were saying that you could get certain kinds of fish down here?

They didn't want me to. I could still eat a little bit.

How about up around Seal River.

There's no mercury up there.

There's no mercury up there.

They were working on it, right [George].

I worked with the biologist ... fish biologist, checking on the mercury.

There was some mercury there.

We were checking on the mercury, ch.cking They theingfish. those reports and they bring us film strips to show us how much we did. ... Very low.

Very low.

Yes, and they said you can eat all the fish you want. It's only this river that's affecting the fish. ... Well at this time of year we didn't have to go anywhere so I would just do the fishing in the river here. We cannot do that any more. Because they told us not to take fish out of the river here.

So there used to be a lot of fish around there?

Yes, in LG1, especially in LG1. ... This is what's bad about the project.

Did you use to get all of your fish from the river when you were in town?

Yes.

Do you know anybody who has been sick from mercury?

...

Have you had any problem. Do you think it's made you sick at all?

No.

We wouldn't be able to tell (laughing). We get all kinds of sickness ... sometimes headache, sometimes a sore arm, sore leg.

How is a person when he's affected by mercury?

Before I try to answer that do you mind telling me what you would think it would do - the mercury? Have your heard anything it might do to you?

Generally about the same thing I've heard every day, you get tired, you get sleepy.

You're having problems.

I don't seen anything good it does - the project - today, because before we never had to pay power, now we have power we have to pay for it. We don't have money to, not everybody has money to pay for it. It's only a few people get the advantages. They don't hire people for the project - you have people waiting for jobs. The don't hire anyone. These are really effects from the project. They don't live like we do.

It's the same with the bush. The people are in the bush. They still have to pay the authorities.

They still have to pay ... what?

The electric.

It doesn't matter where you are - if you're still paying for your house.

Because it would be damaged, it would get frozen, especially in the winter time. You get the water frozen, we have freezers, and I have to pay for it when we're away for a long time.

Are you usually away for much of the year?

I stopped working last spring, in early April, I was working. You remember, you had to call the social services [when you were working as a doctor].

The social services, oh yes, I remember., last August you were working there.

I been working there - I was the community worker for five years and before that I was ... I worked before that.

Oh Yes, I remember calling you about a couple of patients.

(Laughing) The thing is that it was too much for me. Like when I was working, I was not feeling too good, because of the stress, I guess, I stopped working. I quit for good, I wanted to teach more Cree traditional ways in the bush. Anybody who learns, like my children and I wanted to hand them down my experiences before I leave my job.

How do you like it?

I like it. I like working there [teaching Cree culture at the school]. It's the best place to be. I like to work there. I don't belong here in the office. I used to say that you know. I'm supposed to be out in the bush.

We only used to come to Chisasibi - at Ft. George I mean - a month or so and then we went right back again, to live over there you know, just to get maybe once a month to come down for groceries. Not really groceries, only for tea, sugar, flour, lard. That's all we came down here for. So we didn't take no cans or nothing. No meat at all, no canned meat at all. No nothing.

It's all fresh, what we kill, fresh fish, fresh meat from the geese, the ducks, we eat seal meat. ... Our children liked it. They don't eat canned stuff.

Hydro telling us we can't eat fish any more. We just want to, you might think we were going to start eating the Hydro (laughter). It's getting so we cannot eat because the bush food is what we used to eat, eh?. And I eat a lot. (Laughter)

I remembered I was interviewed by a person about mercury research I guess, when I was working back in the Social Services office before.

It's a really hard thing for an Indian to be interviewed about mercury, you know, we don't know what's mercury. All I know is that mercury is heavy stuff. You take enough, mercury full of that stuff there [pointing to thermometer], next thing you'll be close to twenty pounds. I heard you have a mercury mine over there somewhere, in northern Austria, somewhere over there in Europe, I think.

I don't know where they mine it.

They put it in an old bucket. You put something in it like a spoon there and it doesn't sink. That's all I know about mercury. It's something that's very heavy and it's thick. When you get the mercury, I asked if it's curable, they couldn't answer me that.

Who did you ask?

The people [in the Mercury Program].

And they couldn't tell you that?

No, and I remember seeing a movie about the mercury. It's in the ... Indians in the Northwest get it. Out west.

In Ontario?

Chief Dan George. They worry about it. They found little things swimming in the ... this is a movie ... it's not true. (Laughter). It's in the imagination, about mercury, eh? And they get those little things somewhere there. I don't know what they call it, we call it blood suckers. Yes, they found a whole bunch of them in the swamp over there and they know there's something going around and something very powerful, tearing apart beavers or something like that. They found people that had been killed. They caught something in the fishnet like little bears or something like that and it would grow into different things. It's a bear but it's a different thing, a monstrous thing happening. A monstrous thing. It's pollution from the mills.

From the mills?

Maybe some part is true, because I've heard about that, I've heard about that, very heavy pollution on the rivers over there. The Indians have had it, you know.

Did you ever hear about mercury pollution in Waswanipi?

Yes, I've heard about that, I spent a summer in Matagami, working for the company there. They used to eat fish there. I remember hearing all of a sudden it came in like an emergency call, they had to tell the people that they had been poisoned with pollution - mercury pollution in Waswanipi River or some place like that. I remember that.

What year was that?

I wouldn't know, around 60's maybe, 60's and 70's around there.

I had a baby at that time. She was born in '73.

I think it was. Yes.

I had a baby that time. I remember (Laughter).

I was working then.

'73.

I think that's about then, yes. They really specially warned the people, they warned the women - that are pregnant people.

So that would have been the first time you heard about it?

Something like that. They were really watching it. Like an emergency.

Do you see many other signs of pollution in the water here?

Yes, we know there's something there, it's green, it's just like that there, it's like a hairy little thing. You know. It's all over the boat. I have a boat in the water there, I have an anchor over at the water. When I pulled the anchor out that rope is covered with that stuff. We didn't ever have that before.

What happened there?

I put a fish net over there and it's all covered with that green stuff.

That green stuff.

It wasn't there before ... it was there but it wasn't that bad.

How about the water, where do you get your water to drink?

We drink tap water. ... There's a little spring out the road, sometimes the kids go out and drink some. They fill up some buckets. They take some rain water sometimes when they have it.

Did people used to drink straight out of the river here?

Oh yes.

Yes. No problem. It used to be the best river, they'd say, for drinking water. This used to be the best drinking water in the whole James Bay area.

So that's changed.

That's changed. But it still tastes the best to drink it, better than that little green stuff. I don't like eating it too much (laughing). Sometimes, you take tea. It turns all black, black like black coffee. We get it somewhere else. Like a small lake. They go into the rivers too. But this river never does that.

The river water doesn't turn black?

It's ... the colour of tea is brown. It never changes its colour. It's out of the tea bag, whatever the colour is of the tea.

Do you see any difference in the fish people catch around here?

Not much, no ...

Oh, they're bigger. They're bigger than they used to be. Like trout. Trout is really big, trout here, in the river? They're fat. Because they're good, lots to eat.

Where's all that come from? That stuff they eat.

From the reservoir.

From the reservoir? I guess one of the things, in talking to people, you know, about Mercury and neemasakusoon and one thing they say is that they don't know what to think about the fish.

That's the big difference after the dam. People used to go there and catch big fish. They were so fat. There was too much fat in them.

Too much fat.

There was too much fat.

Whitefish ...

There was too much fat in them?

And then they didn't want us to eat those fish.

A lot of people went to the reservoir fishing.?

I used to go there every weekend and go fishing over there, after the reservoir. They went out every weekend, boats you know there. Finally, they told us there was too much mercury to eat the fish from over there.

Us, we don't try to catch any fish around here. Specially over there We go out in the Bay up North.

I'd fish anywhere I'd see a fish. (Laughter). ... I don't try to find out where the fish comes from. I'll eat it.

I remember that time when I told them about mercury, I told them that since I remember when I was a child, the first thing I would eat in the morning is fish. Fish at lunch, fish for breakfast, fish all the time. Even though they didn't want me to eat fish, I would have it It was the only food I could eat. And if it's mercury in them I still would eat it. ... We don't talk very good English. We weren't having much education. (Laughter).

I went to school four years.

We didn't have after grade four. It's the only grades they had.

In grade four you graduated.

At least we don't need an interpreter if we want to talk to a white man.

I wish I spoke Cree, but I can't get past hello, how's it going, and then I'm stuck.

Some people learn fast.

Some.

If you were living with an Indian family and talked some English and Cree, you'd be like an Indian when you came out of the bush.

A lot to learn ...

It was a big thing for us to learn English.

Cree is much easier to learn than English.

I think it would just take some time and also be just trying to speak it in a place where...

French is a hard language to learn. That was very hard for me.

Me too.

I know some words.

What do you think of all the research that's been going on about mercury and testing. Do you feel like it's ... that they're doing a good job or doing what they should be doing?

I couldn't say that. We don't know what they're doing. We don't know what they're doing it for any way. There is a lot of money put out to the mercury.

Do you know how much money?

Lot's, a lot, about 15 million, that I know.

Yes, something like that. One other thing that I wondered about is you know people talk about neemasakusoon ... are there any animals that have akussoon?... Sicknesses?

I guess the ones that eat fish.

There are ducks that eat fish and mercury. They warned us not to eat them. I don't think they tested every fish, but they warned us. The fowl that eat the fish. They warned us not to eat ... loons and merganser ducks. There are lots of birds that eat fish. Before we never did eat some of them - a few loons are very good to eat. We eat them all the time.

You still eat them all the time?

Oh yes, we don't care what they eat. Down south, I saw some loons eating out of somewhere on the lakes. I know that all the sewers go in there and I can't eat a duck. You're not an animal, you're not going to get sickness. You're a different person. A different system in your body.

It doesn't matter really?

That's the only thing we think.

What about for other reasons, do you ever come across sick animals when you're hunting.

Oh, yes. Maybe fox. Rabid animals.

You come across rabid foxes?

Oh yes, I see them. They go and bite anything. They used to fight the dogs and the dogs get rabies after that.

So what do you do if you come across a fox with rabies.

Just shoot it. We know that any animal that has sickness, we kill it.

Do you come across other kinds of sicknesses?

Caribou get some sickness. I opened it up and all their lungs were different colours and they were stuck right through the body, and through the ribs. They were sick.

We would just bring them to the dump. You see there were lots of dead caribou in our hunting area.

Especially when there's no fat at all. We don't eat that kind.

So, If you shoot a caribou, and then find sickness in its lungs or liver, then you don't eat it.

No, we don't eat it. We just burned it.

What about the bears?

Yes, we find some bears that were very skinny and can't eat them, you know.

Not much meat in them.

Animals that are sick, you can't eat them. They get skinny. We know when they're not good to eat.

We're not being fed what we're not supposed to eat.

Do you ever catch fish that you can't eat?

Sure.

Sure, I remember sometimes.

Sometimes they're very skinny. There are some times that you just get rid of it.

Does that happen very often that you find unhealthy fish?

Not very often.

Not very often.
When there's a lot of them spawning. Some of them are OK. There are too many of them.

When there are too many of them they can't handle them all. There's not too much to eat.

How about when you look at the health of .... When you look at the health of people in general, do you see much change in their health from when you were a kid, or younger?

Yes, a lot of change, I guess we didn't know before, when there was not much doctors (laughing), like a long time ago, when I was a child. Because we did not have anybody to do the survey. (Laughing). They have a lot of diabetics now, ... cancer ... that kind of sickness.

The way I know cancer is affecting a person. I'm sure one of my grandfathers when I watched him die, he had cancer because he coughed. He had to cough. Either that or Tb. Before we didn't know how he died by the way he went - what killed the old people. We heard about them.

Heart attacks? It's hard to tell.

We figured it out, we know now. A person would be sick for a long time before - a long time ago. Now we know.

So you can think back and make a diagnosis.

I asked him. We talked together and talked about things together. Sometimes they talked about other people a long time ago, and they say 'Maybe that's why he died.'

How about the kids, were there many kids dying before, children?

Yes, before, all kinds.

They all died of starvation. My mother's father died of starvation.

My grandfather died.

There's a tape that goes on sometimes - a lady telling a story about starvation. They [the people who starved] were already gone by the time they got there.

How about things like vision, trouble with vision or hearing?

I remember when they had blindness.

And how about shaking?

They didn't die of that. One of my grandfathers, he lived a long time like that, he used to be hunting like that.

How about the health of the old people? Has that changed?. I know these are kind of difficult questions to answer, but what's your impression? Do people live longer? or less long? or the same?

I'd say that before our time, before this mother, grandmother, great-grandmother, died at the age of one hundred twenty-four.

A hundred and twenty-four?

She must have been an old lady. I don't remember her.

She was very great. We know her grave in Seal River.

That was your great-grandmother? So she must have been ...

My great-great-grand ...

She would have been born what, around eighteen hundred?

No, not eighteen hundred, later than that.

She was still alive when you were?

Now I don't remember. I don't remember. I don't even remember my grandmother, my grandfather on my father's side. I remember the ones on my mother's side.

What was your name before you married?

Neeposh. My uncles were chief.

The greatest chief in James Bay. We need some chiefs like that.

That was the last elder chief?

That was my elder after the other one. They were chiefs after the other. He died in 1980.

We're having problems having chiefs.

How do you mean, what's the problem?

They followed the white man's way. But you know always the white man was wrong. Always. (Laughter). That's true, we see that now. That's very true.

The young chiefs are like white men.?

Oh yes.

They want to be on the white man's side. They don't remember they're Crees. But they can't be white men. They were born Cree. They never could be white men.

I heard a lot of different people talking about what it is to be the Cree way.

That's where the fights start. We want keep our own way, and the White man say's we are wrong. And they start to fight us.

They want to take our land.

The only way to beat us is to get bigger guns - like at Oka there. You know what happens. The government, they knew they couldn't win so they had to do send an army to them. The Indians were not there to fight, they were there to protect their land. They weren't there to fight and they sent a whole army to them.

Those guns are always there in the background ... ?

Me, a lot of times when I think about us - we're Crees , Indians - I often think we are the luckiest persons on earth. We lived from the land before, and now the whites want to take it from us. We're the luckiest persons, a long time ago we didn't even know about money. We didn't use money to live on. So I think of the ones who just live on money, they don't have any jobs, see, on TV I look at pictures sometimes but some people they go on the streets with nothing to live on. Us, we go in the bush and we're happy over there. That's why I think we're the luckiest persons.

If you're an Indian, you can walk out of the village, take a little knife and make yourself a bow and arrow out there. When you're hungry you get a ptarmigan. If you need some clothing you kill an animal and you have it to eat at the same time. We can survive anywhere. You go to Montreal, you don't survive. You see lots of people laying around on the streets over there. We see it too. We been to Montreal and some other places. We see how people are treated there that have no homes. To us it's really sad.

That's why I think we're the luckiest, we're the luckiest people.

They say that nothing affects the human life or Indian life. Bourassa says that nothing affects us, but it does. That's why he's destroying the land right where the Indians go hunting. Right along the river, you got Indians travelling along the rivers for survival, to survive, you know. That's what he's flooding, he starts his dam right from the river and he opens it up with huge waters and destroys the whole thing that's around them. That's right where the campsite used to be. And Indians use to travel right up to the canal with a little paddling. He's destroying all over there. Even the rivers, where they come from are blocked, where they come down to the other rivers. Like Eastmain. There's no river over there any more. They run the river to this river here. They still see and they are out to destroy everything.

They think it's not enough yet. They want some more, because he wants a lot of money, he doesn't think about the Indians who live on the land.

He hates rivers - that Bourassa - he's a river killer, a water killer.

Maybe he had a bad experience with a riv[illegible]hen he was a child.

A dam builder and a river killer.

Can I ask you about one other thing, it's the bush medicines.

The tamarack tree? It's the best plant that you can have, is a tamarack bark.

We use it still.

We still use it as bush medicine.

Out of animals too. I was treated when I was pregnant. I had my baby in the bush. It was terrible. I was haemorrhaging and they used the castors from the beaver. They boiled it and gave it to me to drink.

It stopped bleeding.

That was my first child.

Were all you kids born in the bush?

Not all my kids, three of them.

Three of them. How many did you have?

I had eleven.

Eleven. That's a big family.

It sure is a big family.

That's the third one. I went in the hospital.

That was the first one, born in a hospital.

The first three, the first three were born in the bush.

The first one that was born in the hospital - it was two days old.

Two days. Then she died. That was our fourth daughter.

She had pneumonia. But where did the pneumonia come from? It's hard to say. It was in the morning. It was seven, I tried to stay away.

All the other kids were OK?

Only one of the them had a problem, she was born three months premature. You know she had a sickness. She was sick all the time. She had meningitis on the brain. She was in the hospital most of the time.

She got better then?

She got cured.

She got cured.

It was a miracle. She's OK, she's going to school and she's going to be twenty-two this year. She's not married. She still goes to school.

If you want the whole story about that you talk to Dr. Dumont. Dr. Dumont was her doctor.

She's OK, no different from the other two.

Why did you say it's a miracle?

Because before the doctors told us she has to use medication all through her life, because of her sickness.

She didn't? You know doctor Dumont pretty well?

Oh yes, pretty well.

How is he as a doctor?

A good doctor.

He was my doctor when I had my kids, he used to deliver my kids.

He's a good doctor. He's very good to the people. And the people are not scared to ask him anything at all.

They're not afraid of him?

He's a friend to the people, to the Indians. He knows how to say something in Cree. It's ok, when you want something.

He has a big family himself.

He does eh, he has a family?

When one of my boys was born, his wife had children at the hospital.

She had her baby out here?

She had a few of them up here on the island.

On the island.

It was Dumont.

Was there another doctor on the island?

Yes.

He didn't deliver his own kids?

(Laughter). She had hers before I did. ...

That's another thing. The Indian woman even delivered their new babies by themselves with nobody in the tent. We know one of us, that's about the same age, out hunting in the bush. When they came back, she had the baby already in her arms. They had to go somewhere, that time, but they knew the baby was coming and they were all prepared, they had everything laid out, lot's of wood, they would just throw it inside there.

That's right, near the stove. She had a little girl. She could ask her to bring something if she needed some things.

Do you still use much bush medicine when you're out?

When we don't have any medicine.

When the White medicine doesn't work, we have to use it.

Yes, that's what the Indians do. If the white medicine doesn't start, we have to start on Indian medicine.

How do you learn about the bush medicine. Where do you learn.

From our ancestors. From our grandmothers. (laugh)

There's one other question. Is there any other kind of poison that Cree people would have experience with? Do you come across poisons of any kind like mercury? Is there a word for poison in Cree?

Poison - wichweego.

Is mercury considered poison?

A thing that can affect you, a thing that can, it can kill you.

Do people think of mercury as a wichweego? As a poison?

They talk now, you know you're not supposed to eat it.

Would anybody ever?

They even call that medicine wichweegoin - the one's you cannot eat -that's wichweegoin.

What kind of medicine?

(Laughter) ... liniment.

The things that they can't put in their mouth, like the medicines, you can put it in their mouth.

We miss the medicine that they used to have before, like a pain killer, a Perry Davis pain killer.

I didn't know that.

You didn't know that. Perry Davis pain killer. It's a pain killer. It's gone now. And it's the best thing you ever used.

It was used for convulsions and stuff like that.

Did you use liniments for convulsions?

Yes, and for the kids when they had, that would be good for a ... You'd have pneumonia, and you used to wrap in that. They would make alcohol, like rubbing alcohol. So they'd rather have that than the alcohol at my house. It's a real strong stuff, it was white, thick white, and it smelled very strong, a very strong smell. It was used for rubbing in. White liniment they called it.

Are there? ... like bush liniments from the bush?

Oh yes.

What kinds of things would you use?

There was things for bush medicine. They boil stuff - there was stuff there, they'd make it flat and they'd put it where ever as a poultice. I'm looking for it all the time. Because I know my father used to carry it all the time - that pain killer, Perry Davis - and my uncles sometimes. You could count on it. They used to carry that. You put it in your tea, they'd put it in hot water. You can't drink it straight. They'd just put it in water. A bad cold, when you get a bad cold, that's it. That's the medicine for that.

I wonder, can you pass me that blue book behind you [a pharmaceutical compendium]? To see if they'd have it in there.

You can also use it as a liniment, rubbing liniment.

Are there poisons in the bush, like what sort of things would there be? Are there like natural poisons that you need to watch out for?

There are lots of things you don't touch.

Is there anything like that?

Poison ivy, I don't think we have it at this end. Only down south. It's usually from the food or the air, that sort of thing. We call it ivy on the grass.

Let's see if this is down here. This is all the medicine you can buy now. It may not be in here because it's...

You know, you know how the skunk has glands? That's the best medicine.

From the gland? What do you use that for?

This is for rubbing. If you get sore. We didn't try this. We just wish that the White man would try to do something on that side. I know you're searching for a lot of secrets. Especially the aches, for that or for cancer. Certainly medicine for that.

There's something in the gland.

They used to say that it was forbidden.

I'll tell you a story about that. It was not long ago, I know that for sure, from Moosonee. Doctor had let him out because he had Tb. He was dying. There was nothing he could do. His mother was quite old. Somehow she got hold of one of these little things, those skunks. Took some stuff out of it and took it with them when they went up to the river by the falls and they said to take it once a day I think. She put it in hot water where there was swelling around the neck. They rubbed it in where the pain was. It got better and better. He's still alive.

He's still alive?

This is about 30 years ago.

More than 30 years ago. There are some stories like that, there's nothing to be done and somebody comes up with something.

Well, if I am dying, I'm going to find some skunk. (Laughter).

You'll live alone awhile if your people don't like the smell of it. (Laughs)

It can help you.

It can help you ... The only time I ever smelled skunk, these days, driving on the highway. Well, thanks a lot for coming in to talk with me.

Think about those medicines.

There's one thing, old people must have that, I heard of people that got hit by lightening. There is only one guy that was not hit, and they used to go out and they used to go out hunting or something. These people were sick lying out. They'd hear a voice. The people living with you and all those screams of pain and agony.

Something like that, and they heard the voice straight where the tamarack tree was standing. He walked to the tamarack tree and he peeled a piece of that bark right down to the tree and he killed it you know, the way he wanted to use it, and he used it on his people there. So that's how the medicine came from some of the Indian medicines. Not only dreams. Some medicines you know, some came from the dreams. Some came from like that. ... Indian radio, you know that? - witchcraft. You believe about the witchcraft?

I guess it's not something I know about, so it's hard to say whether I believe it or not.

The people, the Indians used to go on the, used to look for something, you know. I don't know how they did it, I can't explain that much. So they covered themselves. They looked through a little glass. When they looked through there, something like binoculars, all area, it's all you could see. Just like radar. The person that did would do that was seeing same as a radar wave. I've heard about that a long time before I knew what a radio wave was, this is exactly how a radio works, exactly what you saw on your machine, and they would bring some of those witchcrafts, and you could hear it, we lost somebody and they put up to those things and they could hear them talking right there. That's how they know when the ships were coming in.

Some things the White man knows, the Indians also know.

It's just like an invisible person. A person will be there. They have a name for that - verstanda they call it - giant, a giant person.

Was it the same as the mestabeo - the one's they made shaking tents for?.

Yes, they used to talk to them. This was a lot better than the radio.

Better reception?

But the receptionist never answered the first ring.

Is there anybody that still has those kind of powers here, or is this all a long time ago.

No, I don't know. Not here. There might be because we don't know what we have. Because we don't try it, we don't try it so we don't know what we have. But there's a lot of people that know some things that are coming ahead, they have dreams. My uncle's like that - he'll tell us something before it happens.

They dream about them first.

It won't happen exactly like they would dream but they had to figure it out.

He has to read it. Just like putting it in a capsule.

You read this book and you don't understand that, but you can read it but you don't understand it. You look up in the dictionary and it tells you exactly what it is. It's something like that.

Mina Tapiatic

Mina Tapiatic is an eighty-three year old woman. Several people I talked to in Chisasibi suggested I talk to her because she was very knowledgeable about traditional medical practices. She was said to have been one of the women most often called upon to attend births at home in the days before hospital births became commonplace.

The interview was conducted at her home with one of her grandsons acting as translator.

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Can she tell me where she grew up?

She was born near LG-4. A dam goes across there. There is a big mountain across from the dam. She stayed in the bush most of her life. She stayed in Fort George Island for 4 years. She's being taken care of now so she can't stay in the bush anymore.

Does she feel the dam and the mercury have affected her life?

There are a lot of effects on her life Her father and great-great grandfather were raised one way. Today everything is in a bad condition. A lot of things have been destroyed.

Can she tell me about some of the changes?

Yes I can tell. Everything we had came from the land. We survived on what came from the land. We didn't have any white man's things [*whom stuk shiu = white man abid shta win = things*]. What we survived on was from what we killed. We managed to survive on what we had [*Miswa mak inshunan*]. There's been a lot of changes since then. One of the changes is that the food that they lived on is destroyed - the fish, the birds, even the small birds are destroyed by the reservoir -what's going on inland and these things can't be replaced. Everything is disrupted now. No more will the game and the land be as beautiful [*tabiyunakwich = the way it was made to be*] as it was before it was destroyed. Also the caribou and everything they lived on. Especially the fish is really destroyed.

What changes does she see in the fish?

About the fish: in the past they never had any mercury, they were never told that they had the mercury. Since they started working on LG-2, that's when we were told about the mercury. There was a place where God made for them to feed and spawn. That's where the fish were given to live. The Creator made for his children that. Nothing was made that can harm his children. Everything was sacred, as it should be [*chibyakin*]. Now the fish are going to the mountains looking for new things to eat. The fish can't go in really deep waters. They go only along the shore.

Do you eat a lot of fish.

Before I ate a lot, and now we were told not to eat fish a lot, so I can't eat a lot of fish anymore.

Do you feel like the mercury has affected your health?

I found out from the doctor from the samples - where they take all my hair, tell me how much fish I should eat. I told him 'Now wonder I cannot eat the fish. It's because you are making the water dirty.' There are two kinds of fish that I was told not to eat: walleye and pike.

Do you see or experience a lot of change in the water?

Yes, very much so. Everything - moose, goose, caribou - the animals survive on the water. The food that the beaver survives on has been destroyed And the animals, they are killed by the water - moose, bear. I have seen them Yes, even the road. All the animals eat on the side of the road. They get killed by eating on the side of the road. I've seen a lot of damage to the nature. I've seen the beaver, what it likes to eat - it's all damaged, destroyed. I've seen a beaver frozen in the winter time Where he made his lodge, the water level was getting higher and higher. When the snow melted down, first I saw the tail. So she knew it was killed because it couldn't stay in the lodge

Can you taste the mercury in the fish?

I can't know the taste of the mercury. The only part I don't eat are the bones. I want to ask a question: back around the LG-4 area, I saw where they put the beaver in the Creek. This beaver had a radio on the tail. The white man thought the beaver would stay in one area. My son went far away from where they saw the beaver. They knew it was there because they saw where there were lots of holes in the snow. That time [when he told me] I knew I wanted to eat the beaver, and my son trapped the beaver. It was still a pup when they put the radio [in its tail]. On the tail it had a lot of scars. My sons said 'Whoever kills the beaver should own the radio.'

Did you eat the beaver?

No, because it had scars. But they were just on the tail. It [the radio] made a hole on the tail. We had to use knives to cut it out. No woman could do it. Only a man could do it. When we killed the beaver, white people came and visited the camp. The white man took the radio. We didn't even know the name of the person.

I have another question: near LG-4, there is a lake called English Lake. We saw a caribou tied into the trees. It was tied up dead and left. Why do they have to do that? Why do you keep destroying the wildlife? [I don't know.]

LG-4 - that's where we hunt. There's a lot of stealing from us - ice chisel, shovel, ice hooks. These hooks, some times we saw the white man stealing everything. Since they have come to LG-3, something has happened at our camp. The white man has been taking the things that we use. We call that stealing. When there's nobody around, they come.

Does that happen often?
Yes, every year since we have those dams. We lose everything to the whiteman. You know the snowshoes we make cost about $300.00.

Is there anything you can do when that happens?

We notify the CTA [Cree Trappers Association]. They talk to Hydro-Quebec or SEBJ [Societé d'Energie de Baie James], or the police. They make the report. Hydro puts money for what is lost, but they only pay half. Us, we lost the whole camp - we were 8 in the camp in our family and six others. In that camp we lost everything. It was burned. The police said it started from the stove, but my grandfather [Eddie's] was the last to leave, and he put water in the stove and cleaned it out and put dry boughs, ready to start when we came back. We left at noon and Mr. Pachanos passed by at 4 o'clock in the

afternoon and it was burned. They said it was just started from the stove. This winter [1991], that's when we got the cheques, but it happened in 1979, when we still lived in Fort George. Everything cost about $8,000, but we only got half. The same thing happened to these other people, but they only got half price for what was stolen. Hydro doesn't believe us and they don't see what we need for hunting.

Does the mercury make you feel angry the same way?

Yes. She's really angry about the mercury.

What would you like to see done?

She's saying that I wish they wouldn't do any damage to the land. That's why the mercury is there If they hadn't done such a thing, the mercury wouldn't be here.

There is One who made the world. The ones who make the dams are destroying our land and everything. He's doing bad things to God. The One who made the world didn't say 'This is how it's going to look - the dam will be here and everything.' He didn't say that.

This is hard to say. She took it from the Bible, what we are told. The one who is angry with the children or grandchildren and beats them, it is better to take him to the Pacific or somewhere where it is deep and let him drown. That's what I want to do to Bourassa. That's how she feels about the one who built the dam.

Once, they were told - the white man put ribbons on the trees - this is how the water level is going to be. But the water level was getting higher and higher. Then they saw only the heads of the trees and then they disappeared. The one who told them how high the water was, she wishes he would sit right here so she could tell him how he lied to us.

A long time ago they never knew or never saw any white man. Her father who was over 100 years old never saw any trace of a white man or plane or anything. When she was young, she never saw any white man. She doesn't believe the white man when he says 'This is my land when he had never been here before.'

About the medicine. A long time ago, they never had to use medicine from the hospital. They would take medicine from the spruce tree, tamarack, and the poplar. Those bushes we had from Joseph [Pachanos], she named them, also those big leaves I first showed you. She also named the rocks, and the moss they used for the baby's diapers - that's what they used for the medicine. She had a cut here [showed me a finger with a Boutonniere deformity] which she healed with white Spruce gum.

Does she feel mercury has affected her health?

No. She has the mercury, but she doesn't feel it. She had those hair samples taken and was told how she had the mercury. But they never told her 'Here's the pill to cure your mercury."

Does she take medicines now?

Yes all year round. There are two different kinds which she takes. [Brought me her pills: two bottles of Anti-Parkinsonian medications - Eldepryl and Sinemet.]

What are they for?

Those pills are for her old age.

What does she think of Dr. Dumont?

He's a very good doctor.

Does she ever talk to him about mercury?

Yes. She was told to eat fish only once a week and today she eats any time she wants to, how much she wants to.

She's had boils for 20 years, but they're just like sand now. She never had any pains and you can't do anything about it now. [Where?] Near the liver She's been destroying the boils now. She doesn't have to worry anymore Little black things - hard like a rash.

There's a lot she wants to tell. Talking about changes from the community. Camping from the past. One reason we do things we're not supposed to do - we do things that are wrong - we take things that go into our head and it makes us crazy. It happens since the white man is around - like booze, drugs, stealing. [What is the cause of all of this?] The white man.

In the past we didn't have any problems for the drinking problems This they blame on the white man. It is since the white man was here that that happened. Back in Fort George we only had the Hudson's Bay Company manager and the priest. Since we have the gate at LG-1 it slows down, about transporting the booze here.

A long time ago back in Fort George when her parents were alive, and other Indian people, she never knew anybody who was drunk. When they wanted to drink, they went to the Church for the Holy Communion, that was the only place they went to taste the vice. She never saw anybody who was drunk at that time Since the white man arrived, he brought the booze. That makes us crazy.
Any other diseases caused by white man?

Yes, from the booze, people that they send down to the hospital who got sick from drinking too much. For example, somewhere inside they got sick - the liver. Everybody knows these guys, _____ _____, _____ _____, _____ _____, they used to drink a lot. Some of these people almost died.

About the water. She almost cries that the water's been damaged.

Abraham and Mina Pasiniquan

Abraham and Mina Pasiniquan are a couple in their 70's. Their hunting territory is inland. Suzanne Lebizay acted as translator.

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I wonder how they first heard about the mercury.

She [Mina] said a long time ago that they never heard about that, but it's caused lots of problems. .. It's since they built the dam that they heard about the disease.

[Abraham] They never heard of mercury, just since they built the dam.

Do they feel like it's had much of an effect on their lives?

Before the dam, they liked to go fishing. And then along the river, along the coast, that's where they found out the fish had mercury. And since they heard about the mercury they never went fishing at LG2.

Do they still fish anywhere else?

Rogan. There's a river called Rogan. Kapsauii. There's a place called Kapsauii.

Whereabouts is their hunting territory?

Kapsauii. They go there killing geese and fishing.

Can they see or taste the effects of mercury in the fish at all?

No. They don't see it. Or taste it. **They had tests on their hair every summer since 4 years.**

This morning they went to the Commercial and they came out the door where those people are. [I guess you heard about that.] **They won't have the results until next summer.**

Is that right? It takes a whole year to get the results?

[Daughter, in background in English] Yeah, it takes a whole year.

What do you think about that hair testing?

[Conversation with daughter in background. Invited to come to table.] ... so many people who have so much mercury.

They know for sure that the mercury comes from when they build the dam.

Because of the land - they flooded the land - because of that, the fish is eating that [vegetation]. Because of that they got sick.

Can they see sickness or changes in the fish since the dam?

The only way they know about the mercury is for their hair being tested.

Did they ever fish in the reservoir before? In LG3 or LG4?

They never went fishing on the reservoir, but where they go fishing, you know, scientists went to check their fish, they never found any mercury on the fish there.

So up by Rogan, Kaniapscow, it's ok?

They think that the fish wouldn't have mercury if they didn't flood our land. When they flooded the land. That's what many people say.

How do they feel about the dam?

They finished the dam. They can't say anything against it now. There's nothing they can do about it. Even though the people were against the dam right from the beginning, there was nothing they could do.

The river here was the cleanest, purest river you could find on the territory.

They seen a lot of changes on the river since the dam?

[In English] **Yes, a lot of changes.**

The ones that go hunting LG2, LG4, they eat a lot of fish. She said they found out that even women who are pregnant and have their babies, even the children have mercury, even the babies, newborn. But the ones that go hunting in the north, they have no problem.

Do they know of anybody that's been sick because of the mercury?

Nobody. They don't know anybody.

Well, If somebody's got a lot of mercury, you know, they can quit eating fish for maybe two, three months.

[Mina, in English] And this thing going down by itself, the mercury. No matter how high you have, you stop eating fish a couple months, it's going down.

Have any of you had high levels of mercury? Anybody in your family?

They have a bit, but nobody told them to stop eating fish.

Is the mercury something that people talk about a lot or worry about a lot?

No. They don't talk too much about that.

How do you all feel about the research and the way the mercury problem has been dealt with and handled? Do you think they've done the right thing?

I think they've done the right thing.

What sort of information do you get about the mercury? Are you told very much about it?

People get information. They have results, especially when they get results from the tests they made.

Do you think it's enough?

Yes.

Some of the people I've been talking to told me about problems down south around Waswanipi before the dams were built, because of some factories? You ever hear anything about that?

Yes, we've heard about it.

What did you hear?

That's the only thing they heard about, that they couldn't eat fish in Mistassini and Waswanipi.

I'd heard too they showed some movies here?

Yes, they did. [Daughter] I wasn't there.

How about your parents?

They only showed a couple of people going fishing along the coast.

There was one movie about Japan. They ever see that?

Yes.

How was that?

He can't remember. He just saw it like this.

He remembers a time in 1939 when he was born, he remembers there were so many dead fish on the lake, along the shore. Some of them were alive. The ones that were alive, they took them and ate them and nothing happened. He doesn't know why the fish were like this. ...

1939 ... I guess you weren't even born then [laughing].

No, not even close.

He was wondering what happened to the fish that time. Dead fish ... just dying like that. *I guess I know a lot less than he does.*

[Mina, in English] They were just like that along the shore in puddles. ... Near the shore eh?

Now he's talking about fish. Around June, they lay their eggs. [Suzanne: I can't translate nemabi in English.]

Can you give me an idea of it? A fish with a mouth all puckered out?

Yeah, like that eh? [laughs].

He's talking about the time when people were still hiding the fish. The time it was very cold. Sometimes they catch too many fish [and hide them.] That time the fish were rare, not like today, a lot of fish. ... Now he's talking about the whitefish in October, when they lay their eggs so close to the shore, you could just catch them like this [with hands]. They were so close to the land, you know, they were not scared.

Is it still like that?

Yes, every year it's like this, every October.

That nemabi, it's a particular kind of fish? A sucker?

It's not in the Bay, in the lakes and rivers.

Do you ever come across sick fish?

That was the only time he ever saw that.

Not since the dam?

He was talking about that. It was rare to see that. That time they were happy to see that, because the dogs had lots to eat.

Do they ever catch fish they can't eat?

No.

How about other animals?

That time, along time ago, they caught skinny fish, they didn't eat it because they thought it was sick. So now today if they find fish like that, people, you know biologists? - they take the fish and send it down south for tests?

Do they ever hear back?

No. They never receive results.

She said the animals were scarce, like caribou and fish. But nowadays they got lots of caribou.
Are the caribou healthy these days?

There's so much caribou. Sometimes they're just crossing the highway like this. The ones that die, that they just find in the forest, they don't know why, but they don't do tests on them.

Now they are talking about white-birds. [*Ptarmigan?*] Near LG4, they found them, they were so small. The meat was black. [wife] They found out they had mercury. They found out that those birds that eat on the highway had mercury because of the salt they put on to melt the ice.

Oh yes?

[That's what they say.]

Where do they hear about this?

They heard it here.

Are there many other birds which seem to be affected by the mercury?

We hardly go on the traplines. People who go on their traplines could tell you more than we do.

Did you hear about the dead moose they found on the road?

Any idea what caused that?

They are trying to find out what happened.

Who's trying to find out?

The people who've got their traplines near LG4. They asked the meat to be sent south to be analyzed to find out what's happened.

Joseph and Mary Pepabano

He wished he had the same (dictaphone).

I'm sure he could make much better use of it.

You know why he likes it? Because at the meeting he doesn't have any small recorder to record everything. ... [Maybe his wife could tell you a bit about they did when they were delivering babies - what medicines they used]

Would Mary mind? Has she helped in delivering babies? I'd be very interested to hear some of her experiences there in ...

She said that's her son's daughter [pointing to photo] She's big now, but when she was a baby, she was very small.

Very tiny eh.

It was when they first got married. ... the first baby they had. They were alone in the teepee, he was there to help, they were alone with their son and daughter. It was in the winter, all the lakes were frozen, it was cold. She was born premature, that's why she was so small.

How early was she?

Her daughter-in-law, you know, she lost her father in the time she was pregnant, and she was worried maybe from that, that the baby was born premature.

I wonder if she knows of anybody recently that has been born in the bush ... or is it all finished now?

She never heard of anybody having a baby in the bush.

... since they moved here to the islands? So the last one would have been ...?

She said she delivered three babies in the bush before they had the hospital on Fort George.

Before they had ...?

She says they were in the bush ... she delivered three babies.

Is that before they had the new hospital?

It was the time people used to go outside the village.

So was that before there was the Catholic hospital?

The hospital was already there but people used to go in the bush even if they were pregnant, close to having their babies. They even went in the bush then. Nowadays, he said, they go to the doctor. When the women got babies the doctor tells them not to go in the bush but to wait to have the baby. Before the doctors came here the woman used to take care of herself. She never went to the doctor for a checkup. Probably at least she

went for a checkup but the doctor never told them to stay in the village, so she would go in the bush

And do they . do most of the pregnancies worked out ok?

Yes, yes. Except they had a bit of a problem with the premature one, after one week The baby had problems with its stomach because the mother couldn't breast feed it. She only breast fed it for a few days but something happened, there was something wrong with her nipples. She had a sore so she use to give water to the baby. She didn't have anything else. That's why the baby got sick.

Ordinarily when a woman had sore breasts, a sore on her breasts, would she stop breast feeding?

At that time they didn't have any ointment to put on the breasts so they used the fat from the birds or any animal for a cure. So she had to stop until it got better. She used to put animal fat on them.

Was any kind of fat better than others?

They had the fat from the geese, that's the best, then the white birds they called the woosuck, and the bear, and the beaver. They used that for ointment.

Is there eh, I'm wondering why goose fat and bird fat was better than the other fat.

Because she saw her grandmother too used that, and the old people she knew. That's why she used that goose fat. That's why she thinks it's better.

I wonder if she would mind talking about how it went when a woman was pregnant?

OK. They used water, they brought water, and for the what do you call it for the baby?

Cord?

They used black thread. They never used any medicine like they would do at the hospitals.

So they wouldn't need any medicine. And when the baby was born would they tie the cord right away or would they leave it for a while?

They would wait for the baby to start crying, they wait for the baby to start crying and then they cut the cord. Like the doctor would do here in the hospital. He doesn't wait I don't think.

No, different doctors are different, but usually not.

[Translator] What I noticed about women having the babies in the bush, the husband usually lies on the side of the wife while she's ... maybe I should ask this question?

It is to comfort the wife, that's why the husband lies there, to help her through the pain. She could ask for anybody, the grandmother, or somebody she likes to comfort her, you know, through the pain.

And when the labour pains started what would the woman do? Would she go immediately to lie down or did she walk around?

She doesn't lie down right away. She, how do you say that, tries as much as she can to do a bit of work. To walk around.

To give birth. She would keep working then?

One time, there was a teacher here, a white teacher, she was expecting, that was showing what would happen if she had a baby in the bush - if it was delivered by an Indian woman in the teepee or somewhere here. I guess the doctors went there to see. Just to show the doctors what the Indians did in the bush to deliver babies.

Is that long ago?

There was a woman called, it was in the summer time, she came from [unclear].

Is that before the move from the island?

It was here.

Has anybody else delivered in a teepee since the move?

She said Sarah would be the one to go and see, she would talk about that. Maybe they made a video tape of that.

How long did labour usually last?

She didn't have too much labour because in the bush you move around all the time. It's not like here. It takes two days to have your baby, you got to wait two days at the hospital. Because there in the bush you move around a lot.

Did you ever hear of labours going on for a long time?

She never saw that.

When women were lying to have their babies, how would they lie? Did they lie or sit?

It was the position most comfortable, it was up to the woman. She could lie down or sit up... She was talking about the woman, what she had to do when she was pregnant in the bush, you know, when she was sleeping she couldn't lie in the same position, she had to move on the back, on the side, so the baby wasn't stuck, I mean the baby wasn't in one position all the time. Then she could do work outside but not too hard, simple work. She had to move, keep moving so the baby would be alright when it was born ... She doesn't know too much about babies because she said she herself had one child so she can't talk too much about it, what they do with babies in the bush.

How about after the baby was born, and after the cord had been cut. What would they do about the cushion.

As far as she could remember, you know, people never would throw it out, the woman used to burn it - never put it in the garbage.

Was there ever any trouble where the cushion didn't want to come?

Yes. Because the woman, you know, she had to move around during her pregnancy, and if she didn't do that then she would have problems, the cushion would get stuck to one side because she didn't move too much. That's why she said before, you know, the woman had to move often when she was sleeping. She couldn't sleep in one position. Like she said you know today, the women, when they're pregnant they don't want to work. They just stay home, sit around.

She's impatient, you know, to see the baby come out, because here in the hospital when they got babies they just wait for the baby to come out in the bush when she delivers the baby, she said they used to push, how do you call it, push the baby down like this even on the back, she used to make him come out so the baby would come out slowly, I mean much quicker. But here in the hospital they don't do that, they just wait for the baby to come. That's why she's impatient when she's in the delivery. It take so long for the baby to come out.

So they would rub in front and in the back. Would they rub with the contractions or between contractions?

During the contractions.

Was there any midwife? She said she delivered three babies.

She was alone. There was nobody to help her.

So she delivered three of her own babies?

No, she said she only got one child.

Only one?

But delivered three different I guess for three different women.

Were there women who delivered a lot of babies that were considered especially knowledgeable?

She knows quite a lot. Some people, some women are already dead. There were women that used to act like nurses, what do you call those people delivering babies?
Midwives?

Midwives. They passed their knowledge on to other women, you know, the older ones. Whenever a baby was ready to be born they used to call on them, so they used to teach the other women around. A long time ago, this woman, you know they looked like, they acted like nurses, even though they never went to school, it looks like they had a gift, you know. So they showed people.

Are there women like that still around?

No. The old women died.

The old women died?

In the old days, people, I mean women who were pregnant never went for a checkup like here in the hospital you go for a checkup to have your blood pressure taken and everything. In the old days they never did that. They just wait for the baby to arrive.

Do you think the checkups do much?

Today everything is complicated, you know. She said if they go for checkups it just makes them tired, more, it's not like in the old days. The woman was ready for the baby to be born. She had nothing to be worried about, nothing to worry about, who to go and see. Now she's talking about nowadays, you know Women got so many problems with babies because people are drinking around here. The babies are deformed because of drinking. When they get frightened by people who are drunk and come in their houses that's why babies are born premature like that. In the old days nobody ever thought about drinking.

Does she know of many babies that have been born deformed because of drinking?

No she hasn't heard too much about that. She thinks too about the children now today, you know, the reason why they're drinking so early is because the mother was drinking during the pregnancy and they go back normally. That's what he thinks anyway. In the old days they had to take care of the women, you know, to make sure during the time that she was sleeping that nobody disturbed her, or scared her so the baby would be normal. But it's not the same today. All women when she's pregnant could be scared by a drunk coming into the house.

He was talking about the children who are handicapped. He said he saw quite a few here in Chisasibi. He says that's the only place where you have handicapped. He doesn't think you got them in Wemindjii or Eastmain. He thinks it's the only place where you got handicaps. And he thinks that it's because of that, because the children are like this, that the women were pregnant and were drinking.

When he was talking I heard him say the word 'neemasakussoon'.

No he was just thinking about that too. You know, it could come from that too. If the children are like this. Do you think so? That it would be like this?

I don't know. It is just something that eh I guess it's a concern but I wonder what they think about this neemasakussoon during pregnancy?

That's why he was talking about that, he figures that you would talk about it, why the children are like this?

So, he's asking my opinion? I guess I don't have any real answers, but he says that he doesn't know about handicapped children in Wemindji or Fort Rupert - that's interesting. I've never heard anybody say that it's only in Chisasibi.

That's what he thinks. There are so many here, hdt sauld..come from the family too. . She was talking about babies, you know. If they got mercury it could be coming from the mother breast feeding the baby. She's eating fish, and you know she breast feeds the baby, the baby must have mercury. Is it possible?

I don't think that, no. It's possible but I don't think that would give the baby as much mercury as if the mother was eating a lot of fish during pregnancy.

It could be true, she said.

The honest answer would be that I don't know.

She says she doesn't know because she's not a doctor.

Me, I am a doctor and I don't know.

They want to know how long you are going to stay here.

Not much longer, actually, I'm leaving Saturday.

You're staying there two or three days?

In Wemindjii, yes, and I may be back later, in the winter sometime. ... Do you, I wonder if they know of anybody who has been sick from mercury?

He was talking about the ..., are you still asking the question?

Yes.

He was talking about his leg, his foot and this sickness, and the doctor never told him it was from that, the mercury, that he had a sore leg, or that he had a cold, that it was from mercury. But the only thing they are doing is to find out if they have mercury is to take a strand of hair, or a few strands of hair and send it away. That's the only way they can find out if you got mercury. But he doesn't know if anybody got really sick from mercury. He never heard of anybody.

Does he know what kind of sickness might happen from mercury.

He doesn't know. He says he can't tell because he's not a doctor. He never heard of anybody getting sick from that, they got sick because of mercury. He never heard.

I guess it seems to be that one of the problems with mercury is that not even the doctors are sure of the kind of sickness they expect.

They said that they showed somebody on TV the guy that lost both legs. They said it was from mercury But it wasn't in Canada. It was somewhere else.

He lost both legs.

Eh heh, because of mercury.

He'd had them amputated?

He had both legs but he couldn't walk.

But he couldn't walk. Was that from Japan?

He thinks so. It was on TV. .It's always the same answers, since they build the dam that they first heard about mercury. In the past nobody ever talked about it.

Do you think the mercury has had a big effect on life here?

She was talking about the fish. They used to catch fish here in the river but they don't do that any more. People are not allowed to eat fish too much. Besides that they get water from the river. She says that's where they get the water, the drinking water here.

What did she say about that?

They have no choice. Maybe they got mercury in the water and they're drinking it too.

Joseph says this time of the year there is a lot of fish coming up from different parts of the Bay James, that from the South they're coming here and then they're going to the dam. They are spawning, that's why they are coming from the South

They're eating them. There's rapids there. It's a good place to eat fish. The fish they're eating, probably clean and fresh.

So they are worried about those fish?

It's the fish from the South, the ones that are here. Because they are not allowed to eat them, the ones from the river.

So do you think those fish that come up the river from the coast will get contaminated by mercury?

That's what they think will happen to the fish coming from the coast.

That they're going to have the mercury?

Not all of them are coming here, just a few. But when they go back they've got cross with the other ones. Infect the other ones.

They don't eat fish any more from the dam, you know, where they flood the land, they don't take fish from there any more. They used to get their fish from the North, you know, the lakes, but the water has been touched by the dam.

When they first built the reservoir were a lot of people fishing on the river?

The reservoir?

The reservoir, you know, the LG2 reservoir?

Yes. Everybody. Most people were there for fishing. He tells us that the fish used to be in the rivers here, but now this is a...

What sort of fish is that, is that? Sturgeon? (pointing to fish on the counter).

Yes, sturgeon and trout.

Where does this come from?

It's coming from the South, from Waswanipi. But the Northern Store - they just bought it from the company, they just bought it from the stores.

And now there are no more sturgeon here?

No. They are not allowed to eat animals that eat fish. That's something they lost.

What sort of animals does she mean?

Like eh, the birds, the ducks, the loon, they are not allowed to eat any of them. They are allowed to eat them but not too much. They are not allowed to eat otter. It's also eating fish.

Did they ever catch a bear that tasted heavily of fish? That tasted of fish?

You could taste it, whatever it's eating. You could taste it. Some people are expert at that but some people don't know that. The best time to eat a bear is when he's eating berries. That's the best time to eat.

If they caught a bear that tasted of fish would they eat it?

No, they wouldn't eat it.

So what did they say?

No they wouldn't eat it.

What would they do with a bear like that?

They would burn it. That's the best way. She said it's much cleaner like this if they burn it. Even if you bury it, it gets rotten.

When the reservoir was first created did they catch any fish up there themselves?

They used to go fishing before they built the dam, before they flooded the land. The fish were nice. Just before the dam, you know, they had lots of animals for hunting. They could hunt the beaver used to eat the branches. Because, before they built the dam, they had lots of trees for the beaver.

What were the ... did they notice any change in the fish after the dam was built?

He's talking about the time, after they built the dam, they built a special place for Indians to go fishing, you know a special place they could put their nets, and they had to wait maybe three years for there to be fish, and then for them to go ahead and go fishing. But then two years after they go fishing, they found out about the mercury the fish had. He was talking about whether they planted something for the fish to eat before they flooded the lands, he doesn't know whether they did that or just flooded the lands like this. He was talking about the white man saying that they would plant food for the fish before they flood the lands, he thinks that they just flooded the land like this. So maybe the fish just ate the earth that was under the water. They didn't eat the food they are supposed to eat. Maybe that's why he thinks they have mercury - the disease. I don't know what fish they are talking about, a long fish - sturgeon. They used to have a lot in the river before they flooded the land. It doesn't exist any ... There's lots but they can't show it, it's very hard to catch them. It's a long fish. You have different sizes. It's quite long. I thought sturgeon, but it's not that. That isn't it. Jimshow. I don't know the name for that in English?

Is it still there in the river, but you can't catch it?

It's still there but you can't catch it.

This kind of fish, the sturgeon, what do you call that in Cree?

Neemow.

The sturgeon disappeared too, eh? I heard somebody went looking for the sturgeon. Have you heard anything about that? That somebody went looking and searching for the surgeon, it was a project - the CTA. I would like to find out what happened to it?

They heard of it. It is three different parts. He tells it's a place where he never went before. But there's not too much, not too many. It's a place where he never went before.

Is it in the reservoir.

At the end of the reservoir.

Does he have any idea why the sturgeon left?

He thinks that they died. That fish you know, he never moved around, was always in the same spot. Since they flooded the land, he went all over.

They moved around?

They never moved around. Always in the same spot. He never moved around. I think they flooded the land, he went all over.

It was in the river, eh?

Yes.

Do they see much change in the river or in the water since the dam?

It's full of mud and it's dirty, sometimes it looks white.

White?

You know when you take a glass of water and you let it run, it looks white. That's what I noticed too, it looks white. They still drink the water here but not too much. Well they still drink the water here but not too much, not too often because they usually get the water from the different lakes, where they have no problems, even spring water.

He wants to know, you know when they do samples on you for mercury, you know, like usually if they take a few stands of hair, he said that even if I didn't have hair on my head, would they take it from my moustache (laughing). And he wants to know how much people's levels would be high, too high. What number, that he would have mercury, that he wouldn't be allowed to eat fish.

Well, I can tell him the levels that there using for recommendation now, what they say now for women who are of child-bearing age, because there is a concern about pregnancy, say it's 15, above that's it's too high. But for men and for older women, who aren't going to get pregnant, it's 30, the level. Above that they recommend cutting down the intake. Now, this isn't, me I don't know, I'm not sure, but this is what they recommend in the program.

Much higher or lower?

If it's higher then it's a problem, then they say it's a problem (laughter). .... What'd he say.

It's an expression.
What does that mean? Does he know what his level was?

40.

I guess I'm not a part of this program. There's a lot of uncertainty attached to this, even the doctors who said these numbers, you know, they say even themselves they're not sure of these numbers. And over the years, since they first started having experience with mercury, you know in Japan and Iraq, they've been setting the level at different places. Personally, if I had been eating fish all my life and I was feeling well, I had no problems, I wouldn't worry too much if I had a level of 40.

He's talking about the mercury they first found out at LG2, that's where it started from and then came slowly to here. But he said he never heard the doctors talking about people dying from that or of doctors telling people that they would die, that he died from that. I've never heard of that.

And even here I guess, I don't think anybody is even sick from it.

No, that's what he said too. Nobody's sick from it. Even the white man he said, that work at LG2, they never stop to go fishing even though there's lots of mercury. They still go fishing all the time even though there's lots of mercury over there.

Do they fish in the reservoir?

Yes, that's where they go fishing. I guess they just do it for sports, maybe they throw back the fish. When the white man go fishing for that fish, you know, the long fish that we talked about before, jimshaw, they even eat that, you know, they just take the skin off and take the rest of the meat from the fish, they just take the skin off, and they still eat it.

That's not pike, eh, jimshaw? Could you ask him?

I think so, it could be. They don't know. Ah yes, that's it. Pike. Jimshaw.

The place where they made for the Indians to go fishing?

[George brings out the mercury map produced by the CBHSS]. You can't see it. There's three different parts to it ... there's a place especially for fishing. They do not eat fish any more from this part, you know, the red part [on the map]. They built something for the fish there, like a lake, especially for them. He thinks that pike went there too

along with the other fish. The mercury will spread all over if the fish are going all over, like in Wemindji. They're going all over the coast.

James and Queenie Chiskamesh

What I'm doing is writing a history of the mercury, and I've been talking to as many people as I can, trying to get a perspective from as many different people as possible, about what mercury means to them and to the community. Do you remember when you first heard about mercury?

It started with the dam, well after, maybe ... He can't remember when, it could have been two years after they built the dam that they first heard about the mercury. He said the water was no good to them.

When they first heard about it, what did they first hear?

Well the first time they heard about that is when people used to go ... you know they built a place especially for Indians for to go fishing, and people used to go and fish there. It was the first time they had heard about that - that the fish had mercury.

So were they fishing in the reservoir?

Yes. Not often, not often here in the village. They were out in the bush. Sometimes they go in the bush. LG2 - close to there - they go hunting, fishing, especially in the summer time and in the fall, in the winter they are in the bush.

So they still spend a lot of time in the bush?

Yes.

How was the fishing back then in the reservoir? In that place where they built for the Indians to fish, was it good fishing?

They can't tell you because it's not where they were going fishing. You'll probably get the answer tomorrow, when we'll go and see that guy, Philip Cox.

So there weren't a lot of people fishing there.

No.

Whereabouts is their territory?

Along the coast, they got their territory but sometimes in the kilometre 568, that's where they got their land - their hunting ground.

But their territory goes all the way to the coast? So is it the South coast?

What they call Grass River, I guess you heard Grass River?

No, I haven't.

No? Beaver River?
Beaver River. How's the fishing down there?

I guess you heard of Lake Ellen, they used to do experiments on fish.

Lake Ellen?

Ellen. There used to be a little, almost like a little town, he said. That's where they used to do experiments on fish.

What sort of experiments?

They made marks on the fish - identification. Even the fish they had you know were very well, very weak. The fish were no good anymore. They don't go fishing there anymore.

What makes them weak, those fish?

Because they used motor on the lakes to catch the fish. Maybe it's because of that the fish were weak.

Where do they do most of their fishing, is it right on the coast? or up the river?

They go south, here, along the coast there. They don't go fishing up the road.

How about up Beaver River there?

He doesn't go fishing any more at Beaver River or any where.

Or any where inland?

Because he's doing all his fishing on the territory here, or he's got another fishing territory, where he spends his time in the fall in the winter, along the coast, south of here.

Before the dam did he used to fish inland more?

Yes, that time, the fish were much ... They didn't have any disease that time - the fish. The water was clear and the lakes were clear. Even where he was going hunting there on the road, on the south, where he was going fishing, he notices that the fish are already starting to have mercury - they're weak. They're not the same. Not all of them. It's because of Hydro he says.

So you are saying he's been noticing that the fish will have mercu he's going hunting in the south. Yes, that's what he's talking about. Even there in the South, it's starting along the coast, along the river and the coast.

What did he see about the fish?

The whitefish. He's talking about the big fish they're catching, you know. He notices that they're not as big as before, they're skinny and long, it's like they got no meat on them. He's talking about the big whitefish that they catch, they're not the same, they're skinny.

How about the taste, can they taste the mercury in the fish?

Now he's talking about the people that eat fish, that caught fish. He said that they could taste the difference because when they're eating fish they could taste the oil in the fish. That's the difference. I guess that's how they know they got mercury. The fish they are catching, that's long and skinny - they don't like to eat it.

They don't eat it?

No.

So what do they do with those fish?

Which ones?

The one's that are skinny - they throw it to the seagulls. Are a lot of the fish like that or are just some of them that way?

Not too many. Just a few.

How about the other animals, do they find the mercury affects the other animals?

Now he's talking about otters, you know, the people are not allowed to eat that any more. The ducks, the loon, they're not allowed to eat them anymore because the animals are eating fish.

Is it all kinds of ducks?

He's talking about the birds, the long-beaked orange ones, that's the one they're not allowed to eat - sheshee.

Is that a duck?

They call it woosuck, it's a duck. The sheshe is a duck, but the other word is woosuck.

Woosuck? Maybe a merganser?

I don't know.

Do they eat any of those any more? They had to stop that.

They had to stop it. They were warned not to eat them any more. They're not allowed to eat them.

How about bears?

They still eat bear because he thinks they don't have any mercury. He's talking about the animals they're not allowed to eat. The only animals that doesn't have mercury is the beaver. And the rest like the caribou and the moose, they all got mercury. Only in this part, where they got the project, where they got to the dam. Because they don't talk about it along the coast, like Wemindjii, or even up North they don't talk about mercury. Animals haven't mercury. The only place is here in Chisasibi.

Now he's talking about the caribou and the moose they find dead, you know on the ground, they say it comes from the wires, you know, the wires that go on the highway. Electrical wires from the power, it probably comes from that, either from that or from the salt they put on the roads. The caribou and the moose dies. They don't think it comes from the mercury. They don't think caribou or the moose got the mercury. It probably comes from the wires.

Yes, from the wires.

You said before you thought that caribou and moose had mercury.

He thinks that it comes from the wires. The caribous are vegetarian, they don't eat animals.

Is anybody looking at this question - why the caribou and moose are dying?

Some people found those caribou dead, they asked the full report from that, why they already called people to come and examine it, I guess to take a part from the animals and find out what happened. They didn't find those dead animals It was somebody else who found them.

He heard there was a lot of caribou and moose being found dead?

They found out that there were four moose, you know like in a family a clan or something like that ... there was one dead and the other was walking alone, around like they were ready to die, they were so weak. It was the food they were eating, the plants. He thinks that the caribou will, I mean the moose, it seems to come from the wires, when you got bad weather like this, like to day, usually on the wires there's water dripping from the wires to the ground, and it traps in the ground, well you have the moose who eat the plants, it probably comes from that, the poisoning.

It was only last year that they found out that the moose were dying, today nobody is allowed to kill the moose. Nobody is allowed to eat it anymore. I guess that's when they find out why they died.

Who says that nobody should? Where does that come from.

It's the people that say that - the trappers association. That's what the doctor says.

He was hunting for geese, even way past LG4, and his son killed two geese on the road that were just walking on the road, and when they took their feathers off they found out that the meat was all dark. They couldn't eat it, they couldn't even eat the meat, it was all dark. They had to burn the geese. They were too skinny.

Any idea what caused that?

They probably ate at that place on the road, you know, on the salt and gravel.

Have they heard of any people being sick because of the mercury?

He thinks the people are often sick, you know. It's because of the dam, it comes from the water they're drinking. Not good health anyway.

What sort of sickness?

Different diseases.

Have you noticed changes in people's health since before the dam?

Yes, even if the child gets sick, she said, and they take him to the hospital the doctor always tells them it's the water they're drinking. The water from the tap, but then

they have to buy it at the store. If the children get sick it's because they're drinking the water, because they don't have a machine yet to clean the water.

So they drink bottled water?

Yes, water from the store they're buying. Even little babies, small, you give them a bath they get sick - little white spots on their back after - like thrush. If they take them to the hospital, they say it's the water you're using to wash the baby. They would take water from there so they've got to use water from the bottles to wash the baby.

Even the ones who've got machines to clarify the water. They sell it to other people. So it's not free.

So they sell water?

The ones who got machines. I don't think they're all like that, myself. They were talking about the water the Hydro Quebec promised to the people, like they wouldn't get it from the river any more, they would find it somewhere else, but it hasn't been done. Usually they have to go on the road to get drinking water. They never drank water from the tap before. They take water from the road ... they go in the car and take water from the road. You could drink water from there but first you had to boil it.

Would that get rid of the mercury? from the water?

Do you think there's mercury in the water for drinking?

No, I'm not saying it does but do they think there's mercury in the water that they're drinking? [laughter]

She's talking about the place where they used to go fishing. You know, the rapids, just place their fish nets and make a fish trap. Close to the LG1. They got no fish there anymore. Even if you catch fish, there, they're no good.

That's where he's got his territory. He could tell you more.

Yes, I guess it would be nice if we could talk to Isaiah [Rednose].

It's not the first time you are here?

No, I was here last year.

But you didn't work on that, did you? The river, a long time ago it used to be completely full. Since they got the dam, you got water in the middle, you know.

Maybe that's why the fish are gone like this, because a long time ago the river used to be completely frozen. You could go through the ice. But now since they got the dam, there's water right in the middle. When it's warm, you know when it gets warm during the day, you could see steam coming up. Even March, it's full of water in the river.

Even now.

When they finished at LG1 the river will not be so slow. He says that time when they were planning the project, you know, they said the river would not be frozen completely. Many people didn't believe that

They didn't believe it?

He say's when it's cold, it's really cold. That's why they didn't believe it.

They said the fish were dying, did they see a lot of fish dying?

Yes. Most people saw them. Mainly the ones who go hunting there, to the dam, further.

What did they see?

They could see the fish on the dam, you know where the water runs to the shore.

Yes, this is on the other side of the dam or on the lower side?

On top. That's when the water was coming up.

And there were a lot of dead fish there?

Yes, pike, I think.

Pike. Is it still like that? Do they still see dead fish?

They say they don't go hunting too often there, but he knows, along the coast, where he's going hunting, that the fish were sick.

Did they notice any difference in the taste of the fish?

It's not the same as before, before they built the dam. They could taste a difference in the fish.

You know it's so hard to describe taste, could you try to describe what the difference is?

[Laughter] He said one time they were fishing, they went to visit a family who were living here close to the road at a place called Mogadaw, it was a lake, close to, near mile 366 - I think it's kilometre 544 - anyways he said that this woman he knew, you know, she was already killed, she already died. She used to go fishing, putting nets in there in the lake, putting them in the night, and the fish she caught you know she cooked them and the taste was, it tasted like oil. Just like motor oil.

Even from that, the fish was sick from oil. The big trucks would go over the roads, they were losing too much oil. They were talking about the trucks along the road, they are stopping for a while and the oil could leak out and maybe when it's raining you got sand on both sides of the road and when it's leaking it goes on the side of the road, it's leaking out to the lake, maybe that's why the oil in the fish could come from that too. But then the workmen that go on the lake too use motors, the puddles from the motors, it may be from that too.

So when they go on the lake, they use paddles?

Sometimes they use motors too. A long time ago they used to use paddles all the time.

Do they see a lot of change in the river?

They're talking about the river, you know in the winter it doesn't freeze any more so people can't walk on the river, they used to go in the bush. It's changed for that, they can't use the river in the winter any more.

How about the appearance of the river?

When they open the doors to the gates to the dam when the water is coming out, she said it looks like the water's all white. The water is foaming. It's foamy.

Before the dam, the water was very clear, you could even take the water in a cup and drink it. Even in the winter or in the spring time, the ice was clear, you could melt the ice and drink the water. They're talking about the people that live on the island, you know, they're talking about the, they were saying this summer that the water is changed, it looks like it has oil in it. And they were talking about LG1. They don't even know what they're throwing in the river, at LG1. Nobody knows. They're just using - the ones on the island - they're just using the river to do their washing. For drinking they have to go by canoe to get the water, the drinking water from the lake.

They get some of their water from the ponds on the island.

Yes, that's what I mean, the lake's, the little pools on the island. Did you ever go to LG1?

Yes.

You saw the mess they made? Even close to LG1, people used to go fishing using their fish nets. They can't do that anymore. The fish have mercury. When they finished LG1, he says, nobody can go eat fish anymore - the fishing that are close to here - they can't eat them anymore.

Do you feel like the fish along the coast are affected?

They're talking - even in the south - they already said that before, ... the fish are skinny even in the little lakes close to here. They don't even go in the spring anymore. It's the dam, ruins the water (173).

Do you think that's the mercury doing that?

Yes.

He's talking about the ice. It's not frozen any more close to here. They can't go, even go on that lake.

So did they say they thought it was because of the mercury?

That's what he said.

That's what he said. I'm wondering, how does he think the mercury gets into those fish?

He says the fish could go any where they want. They're free. That's why maybe the ones that come from the river here, it goes through here. They're infecting the other ones from the south. He says the fish go anywhere he wants. He says he wants to go to the sun [laughing].

And I guess there's just one more question if you don't mind my asking, do they feel like the mercury has affected their health?

You'd have to ask the doctors. He can't tell you.

OK, did you ever hear of anybody being sick from mercury?

He's talking about the people around the centre taking samples. He doesn't trust them. He doesn't believe that you could find mercury in the hair. She asked a question: how does a person feel when they got mercury?

Now they are talking about when they go to hospital. I don't know, he says. You know you were talking about the numbers before, the levels they got before. They received it before.

Have they ever had - I know she asked a question and I'll answer it -tell her I'll get to it. Have they ever had high levels?

They've had tests every year.

And it's never been high?

No.

What did they think of that little graph they got? That little graph with the levels?

They never passed thirty. They highest they could go is eighteen. Is that normal?

On the graph? I think it would be eighteen on the graph.

Was it the people that's over seventeen to eighteen are not allowed to eat fish?

No, it's not, it's hard to really say what's normal for mercury, but it's not very common. And I guess people get worried. I'm going to answer her question that she was asking before. But before I do that, could they tell me if they have any ideas about what it might be?

They'll probably get pregnant (laugh).

Maybe we should try that with some of the women that are trying to get pregnant. They've never heard of anything? A guess the reason I ...

They find out that the people always stay here in the village and don't go hunting, those are the ones with high levels of mercury.

Why do you think that is?

Because people talk about it among themselves. I guess they got their own little booklets, you know? And sometimes he peeks like this and he can see that number.

...

He's talking about how the Crees are going to survive. They said that they ready to give money to the ones that couldn't go hunting anymore so they could keep themselves. Now the mercury people say they're not allowed to eat from the animals? ... They're not allowed to eat anything. He was just talking about the start of the project, the people who signed the contract made a mistake, you know, asking for exchange, they take the land, they build the dam, the people were not given electricity, they didn't mention that, they forgot.

So now they'll start paying for the electricity.

He's talking about the little villages, how they got their own little generators, their little dam like, but this one is the biggest, that's why they got to pay. It has more power. They have to pay more. I mean the people at Wemindjii don't pay anything. They got their own little dam.

Wemindjii has their own little dam?

You should have somebody go and show you that, it's close to the village.

I'm going to Wemindjii on Saturday.

They don't pay the electricity.

Yes, that doesn't seem fair.

Samuel and Margaret Bearskin

I wonder if you might tell me when you first began to hear about the mercury problems, do you remember?

When they build a dam they first heard about that. Before that before that they never heard of anything. They didn't realize the disease existed.

So they've never heard of the problems down at Waswanapi? they've never come up this far?

No. They've never heard about it before, but sometimes people heard about mercury but they learned what happened at Mistassini and Waswanipi. The old people, the old ones, they don't believe that the mercury exists, that long before they said that, if it existed there, they won't have children a long time ago. But they still don't believe it.

So they don't believe there is a problem?

No, not really.

That's interesting.

He remembers even 40 years before, even before 40 years that they ate fish, even the skinny ones. They never had any problems with that fish. It's since they built the dam that the fish were different. It looks so clear on the outside, so clean. On the inside it's full of oil, so greasy. It wasn't like that before. He knows of a lake that he knew before when he was young, but since they built the dam they could dump trees inside the lake. The fish are all different now. They're not the same as before.

They dump trees in the lake?

They're standing on the shore, on the fishing area and ... and they think that they landed under the water, but as a result from the problem they got [the hydro project] they got problems.

That their land is under water?

It creates the problem... They believe too that the mercury exists because of the difference in fish.

Because of the difference in the fish?

Before the flooding and after the flooding, before there is a difference. Like he said there, the fish are greasy inside, they look so neat outside.

For ourselves, we look at the fish. We don't feel like eating them any more. It's different, even the taste.

Can you describe the difference in the taste?

It's so greasy and fat, like there is a lot of fat in the flesh, in the fish, on the flesh. And it never used to be like that.

Was it right away like that in the first years after the dam, or did it take a while?

That's what they said.

Has it changed in the years since then? Do you see things going back to normal or staying the same?

Still the same. They are just saying there's no change.

For two of three years now we don't fish any more in the flooded areas, so I figured it's still the same.

Where abouts is your family trapline or hunting ground?

LG4.

Was much of your land flooded?

Yes.

Are you still able to get fish on your hunting area?

Yes. Like some of the lakes are not flooded.

And there the fish are ok?

Yes. The lakes that they haven't touched, the ones they have left alone, the fish are the same.

Talking to some people who have been up, I guess they were up looking for sturgeon, they were the Cree trappers up there. Some people have talked about being surprised because now some of the places where those fish were fat, I mean they're finding they are getting kind of skinny. Have you heard anything about that?

I think they're going down.

And also they were fishing the other day on the LG2 dam and there used to be a lot of Pike, Walleye. They didn't catch any. Like they used to the first time when the dam was built so we figure out that they split. We didn't catch anything.

This was in the reservoir.

Yes - that's interesting. Maybe some of the might have died - they're disappearing.

Do you still eat as much fish as you used to?

No.

Is that because of the mercury?

Yes. They told us to cut down the fish we ate and they do a Hg test.

Have either of you been told you had high levels?

No.

I saw them the day before - the tests they did last year. I had 29 and he had 30.

Those are OK levels I guess. What do you think about all that mercury testing - the levels - do you think it makes any sense?

We don't know if it makes sense or not. We just heard of a doctor from Montreal, that he found out that the native people, if they don't eat fish for a long time, he found in their system, he found out that people need some fish of some kind in their body.

Which doctor was that?

Well, my son is working in Montreal, and there is a doctor who comes here Dr Dumont. Well, for people who have been eating fish all their lives I don't think they can stop eating for ever. You need that thing in your body, you need fish in your body once in a while. The same with you. You cannot, when you come up North and you want to stop eating vegetables or bananas or whatever, those are the ones who are in the hospital. So it's the same thing for the Native people. They have been living with, like fish, is the most common for survival in the past. So for ourselves too, we don't eat fish the way we used to but we feel like eating fish once in a while. Then after we eat, we don't eat it for a while, we can feel the fish we eat in our body, we feel somehow that our body wants want fish. And after a while we eat it.

I guess it must be fairly hard on the old people?

Yes. Especially the old people. Like they never eat canned food in the store or meat either. Meat which has been bought. Especially the old people. For ourselves too we're not that bold, we don't like to eat anything in the store, specially the meat. We never eat canned food. it's very hard on the old people.

Do people talk much about the mercury, is there much discussion about it?

No.

Not really, eh?

Well, I noticed that the young people like my son next door, he hardly ate fish because of the mercury.

So you think it made a big difference in what people ate.

Well especially the young people. Especially the one who have been going to school down south.

Down south?

Yes. They don't eat fish very much. Yes. For us who have been staying up north all the time, we like to eat fish once and a while.

Do you go fishing very often still?

Yes, but we try not to go fishing in the flooded area. We try to go fishing where we know it was the best place.

I'm wondering how often do you put your nets out now. Do you do it every month? Has that changed much?

For this month we didn't go in

Can you see much change in the water since the dam.

Since they built the dam, there's many rivers flowing into the La Grande, like at LG4 there is the bridge there, down a little ground there, there is a dam there. Then after this bridge this river, the La Grande river is flowing from Mistassini and the water is very clear out there But after the dam, it's dark and brown. We never drink from that. Before the dam we could just take a cup and drink. Just like that from the river. It was so clear. Now you cannot do that any more.

So what does the water look like?

It's kind of brown, brownish and dark, kind of muddy.

And it used to be like really clear. Oh yes, where do you take most of your drinking water? Do you drink the tap water?

From the spring waters ... from the spring ...

Which spring?

This is the spring water past the LG3 airport. And there's another one here. There was another spring water 58 km from the road and there's a really good one before LG3, that's where a lot of people get their water from.

Did people ever use spring water before the dam?

Another one was just up the river, just a few corners away.

It's a big change from drinking out of the river, to drinking out of springs?

It's very hard to get good water .. well I guess that some people still drink from their tap.

We have a water tank downstairs ... and they told us that the water is safe to drink. And the water is sterilized. We have sterilized water. The clear water just goes down into it and the brown water stays in that boiling. You have to change that [filter] very often. The water, it's really, really brown.

Really. How often do you have to change it?

We do that once a month, or you could do that more often. So that comes from the tap water. That's why I couldn't like to drink the tap water, even though they said it's safe. Looking at that now, that water, I think, I just use if for cooking.

How about other animals, do you feel like the mercury has affected them, the birds or animals?

Well I guess it's affected the birds and animals, like the birds that eat fish and animals that eat fish, we were told not to eat those, because those that eat fish have mercury. Like the otter, a lot of mercury. Sometimes the bear eats the fish too.

Do you ever eat bear?

Yes.

Have you ever killed a bear that you have been unable to eat?

Yes they have. They were really skinny. It was really big but we don't know if he was too old or ... we just burned it all. There's something we found out. We have a lot of bears since the flooding, so I guess because they couldn't stay in the flooded area. There's lots in the garbage dump at LG2, LG3 area. It never used to be like that

What happens when bears eat garbage?

We don't like to eat those who eat garbage because they taste so different.

What do they taste like?

It doesn't taste like a bear (laughing). Because of what they eat they get, it makes them taste not good. They like the garbage down here, it's pretty nice. There was 3 of them - one big one and two babies.

How about eh, do bears eat a lot of fish?

Berries, but fish in the spring when there's nothing to eat, like berries. If he could find the fish, spawning place for the fish, he stays there and eats the fish. He can catch fish like a human being.

When bears eat fish, can you taste the fish in the bears?
Yes. Whatever kind of food they eat, the meat tastes like that. Like, when the bear eats the seal, you cannot eat the bear. He tastes like a seal. Like for the people in the inland, they hardly ate any seal. That's why we don't like to eat the bear when he's eating the seals. But for the people in the coast who used to eat seals, I guess if they can eat it.

How about if you killed the bear and he tasted a lot of fish, would you eat it?

No.

You wouldn't eat it. Did anybody have to kill bears because of that? Because they tasted fish on them?

No.

I wonder, eh, I haven't been here very long, so I can't see what life has been like, I guess, has there been much change here because of the dam?

Yes.

Would it bother you to tell me about the changes? Some of the changes you see because of the dam?

I guess the biggest change is the fishing. They also find a change in different kinds of hunting, trapping. Like every animal that seems to be different. Perhaps we cannot stay like we used to, hunting and trapping after the LG4 dam. We are the ones used to trapping People come up here, come up there to hunt. It's a very small land And what they are doing right now it's going to be more flooded, they are putting the dams up higher. They're building more dams. Like this one, the LG4, there's another dam there, called the LA1 They're building a really big dam there There was a lake before that and there used to be a lot of muskrats and now there aren't any more, because the lake is all flooded. There used to be a lot of ducks, geese and everything, but now everything is gone There used to be a good place for the ducks to eat for geese and ducks to eat. Everybody, and now everything is gone, except the fish under the water. It used to be a very special place for the people, we used to hunt over there, especially for fishing, it used to be a very special place, for everything, but now, that lake is all destroyed and nothing is there The trees are under the water. That's where we used to be in the winter time, like in the cold winter months, for we knew that lake is very good for fishing.

It must be very hard to see all of those changes.

Of course. The trapping used to be very good too, for marten, for lynx, for everything. And now it's not good any more. That's one of the big changes, so it's very hard for us to work out these changes. Especially for us, it's been our survival.

How about in the community here, do you see many changes?

Like right where we are, there used to be good hunting spot. Here right where we are, people used to go fishing, people used to go snaring and picking berries, and now they don't do that any more. There used to be a good fishing spot at LG1, even the dam, when it had been built in LG2, we still used to go fishing there. But the fish were ... they used to taste different. Like they used to taste in the old times before the dam was built. But after the dam, they used to still go fishing. There used to be a lot of fish. But the last time we did, they tasted different.

When you say taste different, you mean that they were oily at LG1 too?

After they built the dam, you can see it under the water there's some kind of a greeny, greenish stuff that sticks on the rocks or... I guess that's what the fish eat. I think that's what makes the fish taste different.

The taste is a hard thing to describe, eh.

Yes.

The only way to taste ... is to taste it.

Well, you know that they call it. That thing that's green, that green stuff.

Did you ever see those spots in the water. They stink. That's what the fish are eating.

They didn't have those spots before they built the dam, and now they got those spots. In the river ... that's what the fish are eating.

They used to catch them a hundred all at once. It was before the dam.

We are afraid of dynamite at LG1. They do a lot of blasting out there.

Is that right, they do a lot of blasting?

Yes.

Where do they do the blasting, is that in the river?

Just there where the river was.

You say you're afraid of dynamite there, you mean you're afraid of them exploding?

Yes. There's a guard there to tell you if there's going to be blasting. One time we were sitting there and they were starting the blasting, and the rocks were high up in the air. Nobody is allowed to go in that place.

Do you think mercury had existed way back, before the dam?

Way before the dam? I guess I could only give you my opinion, that I know from reading and other things and I'm not an expert. But I think there was some there, you know mercury is a natural substance, but the dam increased it a lot, a lot to the point where it became a problem. I think it may have been there but it may not really have been a problem, and I think that the amount is the important thing. It's like medicine, that we use in the clinic, if you give one or two pills a day it will help you and if you take a whole bottle it will kill you. I think there may have been some but not nearly so much. I guess the big question is, you know, whether it is, you know, how much of a problem it is. I think that's a hard question to answer.

I think that mercury comes from the sky. Like I heard that these in the Great River people have a lot of mercury.

Some people say that a lot of it comes from the sky, maybe from Europe. Maybe in the last century, with all of the industry and the smoke and stuff which may be true too, but I think you know as much as I do about that, maybe even a little more.

Do you know anybody, do you feel that mercury has affected your health at all?

No ... the doctor didn't say (laughter).

Do you ever hear tell of anybody that's been sick from mercury around here?

Did you?

Did I? I guess all I know is what people that I talked to tell me. Most people say no, they haven't heard of anybody. I guess there was one person that some people wondered about. It's a real problem, you know. How do you know that kind of thing. That's the problem that all the studies are having trouble with. Even Dr. Dumont. I can only say what I've heard - mainly no. It's hard too, because everybody - all the mercury levels have gone down like this. People have stopped fishing.

Yes.

So if they kept eating would they have been sick? It's hard to say. I think, what do you think about all the studies that have been done and all the research? Hair testing?

They don't know what to think. The Doctors are expecting something for doing that research - trying to find out something, for mercury, what's affecting them. That's one thing we never heard - what kind of problems a person has when he has high blood levels. There's one thing we should know, ok no problems, but the person will have ...

Did you every hear anything? What kind of problems they might have?

I don't know if they ever did tell the people what ... Like there's some people from, I know of people from Eastmain and Wemindjii they were told not to eat fish for two or three years, but I've never heard of anybody, of any person here in Chisasibi being told not to eat fish for 2 or 3 years. There is an old lady that I know from Eastmain who was told not to eat fish for 2 or 3 years.

Who was that?

Her name is Moses - Ted Moses' mother, the mother of Ted Moses. I've talked to that lady and I guess she did what she was told and after 2 years she was told that she could eat some fish but only if it had been caught out on the coast, not the fish inland. So she must have had high levels of mercury.

But nobody here in Chisasibi has ever been told that?

No. I only heard here in Chisasibi that the amount of fish to eat for a certain time. So I don't know if it really comes from the flooded area. Like the people in Great Whale, and the people in Eastmain and Wemindjii ...

They don't fish anywhere, there's no reservoirs or anything ... ?

Oh, Eastmain River is part of the LaGrande and the same thing with Wemindjii. They have a big lake over there and it flows into the LaGrande.

... Something that, I guess when mercury first got to be talked about here, they started calling it neemasuukusoon, eh? I wonder if there were any other diseases in fish, any other sickness in fish that they could compare it to ..I wonder if there is anything like mercury around?

We don't know. We even tried to find that out but it doesn't resemble what we know. Well, we know that it's been around ... but we didn't have any choice at that time. We didn't even know the fish had some kind of disease. We still wouldn't know at this moment if they didn't tell us there was mercury in fish.

I'm sorry to take up so much of your time. What time is it. You have bingo when you get back.

You have bingo too.

Driving me back home in the car, Margaret Bearskin told me how the old people, when they first heard about mercury thought it could be cooked out of the fish.

Abraham Pachanos

(Suzanne Lebizay translating.)

He said before they started the project, they never had any mercury. But since they started building the dam, they found out they had mercury.

Can you ask him if it's ok if I use the tape recorder.

Oh yes.

So it's only since the dam that they had mercury? [Yes] *Can he tell me how he first came to know about the mercury?*

He said he never heard about it before. He doesn't know when. He didn't keep the date when they told him he had mercury.

They told him he had mercury?

Yes.

Does he feel the mercury has had much of an effect on his life, on the way he lives?

No. There's no change.

Has it affected his health at all?

He said he was never sick. But they told him that ... I mean nobody ever told him it was because of that he got sick. He still eats fish. Nobody ever told him to stop eating fish.

Is he still able to fish in the same places?

He said he's still in the same hunting grounds.

Whereabouts is his territory?

He's going hunting between LG-3 and LG-4.

Has the dam had much of an effect on his hunting grounds?

No. There's no problem. ... He said he's just between the two dams, LG2 and LG3, so there is no problem.

Does he think that the mercury has caused any problems with the fish or the animals?

[Problems - I don't even know how to say that.]

Does he see any effects from the mercury?

He doesn't know if there are any problems, or effects.

... She [Abraham's wife] said that since they heard about the ducks and the loon having mercury they don't eat it so much.

I've heard that mercury was a problem in the south down around Waswanipi and Mistassini where there were factories. Did he ever hear anything like that?

He said he never heard about that.

The other thing I heard was that some people a few years ago were sent down for tests when they thought there was mercury around. Does he know anybody like that or did he go down?

He said that the two of them went down. They heard about that. They didn't tell him that they had it. Just for a checkup.

Would he mind telling me about that trip?

[What they did to him?] Well, they didn't do too much. Just for a checkup.

So they weren't there for very long?

They were just there for three days.

How were they treated there? Well?

They were treated very well, he said, but they had to stay in the hospital.

Does he remember what sort of tests they did?

He said that they did all sorts of tests, thoroughly.

What did they tell him at the end of all this?

Well, he said they had to wait a few days to get the results from the tests because they couldn't get the results right away, like they had to wait a few days.

Do you know anybody else who was sent down for tests?

William Fireman. And his wife. There were four of them from the same family who were sent to Montreal for the tests.

Do you know why they decided to send you?

No. He doesn't know why.

They were feeling well? They had no problems?

No there were no problems.

When I've been talking to people, I've heard a lot about fish sickness, about neemasakusoon. I wonder, when they're hunting and trapping, do they find sickness in any other animals.

[Wife] They can't find out like this, she said. Scientists have to do the tests on animals.

I guess I'm not thinking so much about mercury, but about other sickness. Do people find other sickness in animals?

He said they don't eat too much of the animals. He doesn't kill them because they're eating fish too.

How about bears?

They still eat bear.

Do they ever kill bear which they can't eat?

He said he used to kill bears before the dam was built, but since then no. That time they didn't eat it. He said that time it was very skinny. He said the bear looked like it couldn't walk, the way it looked, it was so skinny. It was in the fall. He said 'If I didn't kill it, it would have died.'

What did they do with that bear?

They said they just took the skin from the bear and buried the rest. They guess the animals ate the bear.

How does he feel about the dam?

He said he was against it from the beginning. Since they built the dam, they flooded some land.

Has it changed the river much?

He said it has changed. They can't even drink the water from the river anymore.

Why can't they drink the water?

He thinks the water's dirty now since they built the dam. That's why they don't drink it.

Has the appearance changed? Does it look different?

[Wife] It's different. Even the smell is different and the colour is different too.

He still could drink it, he said. If you're desperate for water, you'd have to drink it.

How about the tap water.
They drink it, but they drink it from time to time.

Do they use bottled water at all.

They usually get spring water, you know the one coming up from he ground from between LG2 and LG3.

Is that Duncan Lake, near there?

No, not near there.

Before the dam did people used to drink the spring water or did they just take it from the river?

They never found out about the spring water because they used to take it straight from the river. Nobody knew about the spring water.

That's where they used to get it before the dam. From the river.

Before they heard about mercury, neemasakusoon, had they ever came across anything like that? [Like what?] *Like neemasakusoon in any way.*

No, he said, never heard of anything like that. Never.

Do they still go out on the land much?

They still go there. They go there every year.

Is he still a registered full time trapper, you know with the Income Security Programme?

Yes, he gets money from that.

I know this is a hard question. When he looks at the changes in the last 20 years, would he say life has improved, or gotten worse?

Well, he said, life has changed. He was talking about the people who used to own the land which is under water now. People used to trap there, now he can't go there anymore. He can't get anything.

And how about for him and his family? For his own life? Has that improved or gotten worse? That maybe a hard question. [Umm.] *Something else that some people have been telling me about a little and I'm interested in is the bush medicines. I'm wondering are they still used very much?*

He said they don't use it very often anymore since they got medicine from the hospital.

Are he and his wife in good health?

[Translates using miyumatsoon.] The two of them are in good health he says, but since he had an operation on his eye that he is taking drops every day. Otherwise they are in good health.

He's not taking any other medicines?

No. He only uses drops for his eye. Nothing else. He wasn't allowed to go hunting because of his eye, couldn't use a gun.

Is he able to do that now.

Yes, but first he's waiting to go to the doctor for his checkup. He's waiting to hear.

When did he get the operation?

He went to Montreal just before Easter.

Does he find he sees better? Does it help?

It helps a lot, he said, because before he couldn't see. But he doesn't see as well as the other eye.

What caused the problem with his eye?

Because he said he had problems seeing with one eye, so he went to see the doctor. So the doctor told him he had to go down to Montreal right away. Because they had to take off the - what do you call it that covers the eye? [*the cornea?*] Because it was moving.

Did he have problems for a long time?

He didn't have pain, but he didn't see too well. Since the operation he's using drops and he didn't have any problems. He goes to the hospital every week for a checkup on his eye. He had to go today, but they called him to come on Friday.

Does he know Dr. Dumont?

Oh yes.

Does he ever see him?

It was another doctor much older than Dr. Dumont.

How does he feel about the hospital and the treatment he gets there?

He said he doesn't know them [the doctors] to well, but they're probably better than I [laughing].

Sorry for asking so many questions, but I guess I have to do that. Has he ever had his hair tested?

This year they haven't done any.

What does he think about the hair testing? What they do with the hair?

He said they wrap it in a little piece of paper and put it in a little tube and send it down south for tests.

Does he feel that the research being done on mercury is helpful?

[Laughing] He doesn't know. He was talking about the people who eat fish. If they eat less, they won't have the mercury, he said.
If they eat less fish, they'll have less chance of having mercury.

Do people talk much about mercury?

No, he said, they don't talk much about it. He himself doesn't talk too much about it. It's the only time he's talking now. He doesn't talk about it because he doesn't know anything.

Does it worry him much, the mercury?

It doesn't worry him much because there is nothing he can do.

Does he know anybody who has been sick because of mercury?

No, he doesn't know of anybody that the doctors would say it was because of that he got sick. He never heard about that.

Is there anything in particular that he would like to say about mercury or anything else that he feels is important about anything?

He can't talk too much because he doesn't know how it affects life here. He can't talk too much about that.

Is there anything that he would like to know, not that I may be able to answer right now, but when I'm writing this history, is there anything he wants to know?

[Long silence, then:] He doesn't know which questions to ask.

I'd like to thank him and his wife for taking the time to talk to me. I'm sorry for asking so many questions. It was very good of them.

William and Hannah Pachanos

Has the dam affected your lives?

The dam doesn't help. Since the dam, the hunting process is poor. A long time ago, what they killed, meat was just like medicine. It helps you.

How about the quality of fish?

It has changed. In the reservoir, where the fish is, they were told they couldn't eat it.

How about their health?

They haven't been affected in their body.

Could they tell me a little more about the bush? Since I'm not a hunter and trapper, I don't really know about it. Could they tell me more?

We could tell you about the bush, but you have to live with him in the bush to learn about it. It is hard to tell about it. Probably you are not experienced. You would be like a child in the bush.

Today's generation has to deal with Income Security Programme. They get payments every 3 months. When they leave, they leave in September, and come back in December for Christmas, then go back at the end of March to wait for the Income Security. After they get their Income security they go in the bush. That's how they do it these days. A long time ago, they started in August and stayed there all year round, then came back in late June.

Who do they go with?

They go as a family, with their children. Sometimes they go in five canoes, sometimes in two canoes. [Who would go?] The one that he lives with right now, 2 sons and 1 daughter.

Where is his trapline?

Almost the whole trapline is under water now. [So, does he have any land to hunt and trap on?] His brother is Thomas Pachanos, so he can share on his land. He can't hunt or fish on his own land anymore.

Does he still fish?

Not in the reservoir. There is mercury in the water. So he goes up to Lake Pinemartin. That is where his camp is. He is able to fish there.

Can they remember where they first heard about mercury?

It was back in Fort George, when they first heard about it. From then they never fished in the reservoir. They don't know the exact year. They were told that they weren't supposed to eat the fish-eating fish. Suckers and whitefish were ok to eat, but not that much.

What were they told the mercury would do?

They were told it would make them sick, but they knew where to get mercury tests. If there was lots of mercury, they said there was no cure. If lots of mercury, their hair would fall out They were told they should know how much fish to eat

Do they feel they have been given good advice, or bad advice?

It's true they were told about mercury. The past 2 years they were told they had a really high level of mercury, told how much fish they should eat. They did that, and then they had another test The mercury level had gone down. That's how she knows the advice is true.

Should anything else be done?

Something should be done about Hg, when someone had mercury. She thought they would give them something for blood to help with mercury. They were told not to get fish from the reservoirs, to watch how much they eat.

Do you know anybody who's health has been affected?

For me, I'm not a doctor. I don't know if anybody could be affected. Nobody she knows feels they have been affected. They weren't told which persons had high levels.

If I didn't have anything to eat and if I saw fish from the reservoir, I would still eat it. I wouldn't think about mercury. Just to make a living, he would eat it

How about you [Richard], would you eat it? [Yes.]

Her sons are slashers at LG-1. After work, they were fishing in the rapids and they caught lake trout about this size (Big). When they brought it in, eh, they ate the trout and they didn't think about any mercury. It was really good. Between LG-2 and LG-1, eh, that's where they have lots of mercury contamination.

How about the mercury, where do they think it comes from? For them, how does it get there?

They're wondering where it comes from, how it gets there, how it gets into the lakes.

They can't know where Hg is. It's the doctors or the biologists, they're the ones who should know.

...

It spreads, eh? It transfers.

Transfers, yeah.
Before the whiteman had these experiments, they put the garbage, these sewer pipes under the ground eh? Before they put it under the ground, they used to put it on top of the soil, eh and they didn't even touch it, they just left it laying around. From the factories there, there's this smoke coming out, eh, these long, long, long pipes, and the smoke goes up eh, and the smoke is flying around in the air, isn't this where this mercury comes from?

Yup, also. Some mercury travels like that, a long way, even from Europe, it would come here.

So before they had these things, before they had these toxic wastes, and before they had these industries, I guess we didn't have any mercury around, eh?

I don't think so much. I mean there's always some around, but probably a lot less and this question is ...

Like I said before, I don't think we had any mercury.

...

They said at the beginning that everything they eat was like medicines, like food and fish. Do they still use much bush medicines?

They're still using the medicines from nature. Whatever you see around, in the environment, they use as a medicine. Like, the rock and the moss, eh, that's for hunting, that's another medicine. In the past, somebody had a cut with an axe, it was about this long, I think [indicates about 5 inches]. He made the stitches while they were in the bush, eh. From what he used, from experience, after he made the stitches, he went to look for the gum. When she was doing the stitches, her husband went to look for the gum, she put it on the stitches. This person was in the bush for a couple of days And when they were back here, eh, and went to the hospital to see the doctor, to check the stitches, she came back and told her what she did was very very good eh, no infections, just like the medicine from the hospital, it was pure. The doctor said the thing that she used was really really good . good product

What did she use for the stitching?

She used the needle, the sewing needle, and thread.

You said they used rocks as medicine too?

For heating eh?

Where do these medicines get their power?

Power?

Is that a hard word to translate?

I can anyway.

For Indians eh, she thinks that for doctors, eh, the way they help people, like in the outpatients, their help is from the heavens, eh, from God. Same thing for this medicine. When they try to help somebody, they pray to have powers in the medicine

Had they ever come across anything like mercury before? Did they know of anything else that works the same way as mercury?

The don't know. Those people who are sick, they just have it eh? Like arthritis, you can get it any time, eh? But she didn't say beyond the arthritis, the sickness eh?

When they look back over the course of their lives, has the health of people changed very much since they were kids, since the time they have experience?

Ever since back in the old days, they never got sick, and today there's a lot of changes in their health. Something always comes up eh, these snots, coughs. Small sickness always comes up. Today some of the people take medicine every day. Back then, in the old days, nobody had any medicine, and they stayed there [in the bush] for the whole year eh, and they never went to see the doctor. Everybody was healthy. She's one of the ones who is taking pills every day.

What's she taking pills for?

What you call it, the lungs, eh, they have a small opening there eh? You are out of breath sometimes, how do you call it? [Maybe bronchitis.] Something like that. [Or asthma.]

Does she take very many medicines?

Only one kind of pills that she's using.

What does she think of them? Do they help?

Yeah, the pills help really a lot. When she runs out of pills for three days, she knows that she is out of breath, eh? She wants to go down slowly, eh?

Does she know of any traditional medicines which would be good for her kind of problem?

She never tried to use anything from nature. One thing that she tried is the uhh ... wischijabooks ... it helped her a lot when she had a really bad headache.

I'll have to try some for my headaches.

Don't take too much. Don't get drunk.

When you take a lot, eh, you'll feel like you're getting high. You're going to feel your eyes trying to pop out. When you use that as a medicine, you have to use a spoon, like what you do with the medicine from the hospital, to take the measurements of how much you take.

So you have to be careful. Do you make a tea out of it?

No, we don't make tea from the wischijabooks.

How do you prepare it?

They way you prepare it is, you put it in a pot, any one that won't melt. They say you can boil the wischijabooks, and let it stand for 5 minutes, 10 minutes. That's when you take the taste.

This medicine is really, really strong. You can mix it with water or tea. If we have a sore throat, eh, we use it with tea or water.

When you were talking about health before, you used the word miyumatsoon. What does that word mean?

Good life.

Is that the same as health?

Yeah, in particular, yeah. Like, when we are using these portable radios, we usually say 'How are you?', eh. Ask them how their life is. We say 'Chi miyumatsoon?'

Do they see many changes in the community in the last 10 years?

Yeah, quite a few changes. Like back in Fort George, we were just all friendly to anybody. Like, we knew this guy, this person was our, almost our next door neighbour, that's how we knew each other in Fort George. But since we moved here, it's different, we don't get to know each other anymore. We are losing friendship.

Why did that happen?

I think the reason why is we have these new people, newborn, for instance like us, like me [Eddie], live faster eh? These old people, they used to visit each other, go to the stores together, tell stories, joke around, talk a bit. Today, those people in the past eh, they are gone slowly, eh. And us, we re coming, we're growing fast. I guess that's where it's coming from.

Getting to be a lot more young people?

We have these people who are going to school, those people who are teenage to adult.

Does she see much change in the young people?

The young people, they lost the way of life. It's because of the school, eh? They went to school really young. And they don't know the way of life, of being an Indian. They try to be the white man's way. Nobody wants to know the way he was. Him [William], he still has the Indian way of living. He hasn't lost it yet, the way he was in the past.
The reason why these young people change is the booze which is around - from LG-2. Sometimes when they drink, they fight each other. That's how they sometimes lost their friendship with each other. For him, in December, he will be 70 years old. For 70 years, he never fought anyone in his life.

They went to New Brunswick by truck. Every store they went, booze was on the shelves. He never thought that he would drink the booze from the stores. He returned, he never tasted it.

Does he feel there's been any good changes, or all bad changes in the community?

There's a lot of changes. This town doesn't go well. It's because of the booze. It's easy to get the booze. That's why it doesn't go well. As far as he can remember as a child, his childhood, this town, back in Fort George, that was the best town in James Bay. Rupert's House, Eastmain, those villages along the coast - Fort George was the number one town. And today I don't think this is the number one town and I don't think it will ever be again.

Had he been coming to Fort George all his life?

Mostly they stayed in the bush. Everybody, mostly that's where they stayed in the bush. Only in the summer, that's when they had to come back to Fort George.

Did he ever spend much time at Kaniapskow when there was the trading post there?

That's where they spend the time eh? In Kaniapscow sometimes that's where they spent their Christmas.

Since his life, he never stayed in this community or in Fort George in the hunting season, after September.

What was Kaniapscow like? Were there houses there, or just the post.

In Kaniapscow there were 4 houses, but the people, they didn't live in the houses, they lived in the teepees. I [Eddie] remember staying there. I think I was about 4.

When did they close that post?

About 20 years ago. I don't know which year we lived with them, maybe '69. The Kaniapscow post was already closed.

How did people feel about the post closing?

Everybody didn't like it when they closed the post down. Everybody had his memories. What we have now here, we didn't have it in Kaniapscow. Water, you could just go down to the river and take a bucket of water.

Those coastal people had credit at the store. They had a lot of credit. They didn't have enough fur to keep it [Fort George post] running. That's why they closed Kaniapscow post. So we had to come back to the island to keep the store open. We paid credits at the store.
There's another thing we don't like about Hydro Dams They told us wherever we live, a road will go to the camp and you will use the road as a river. These roads, they are not particular roads. They told us these roads will be shovelled. But at LG-3, the roads are blocked often in the winter. There's a big grader or dump truck blocking the road. In the winter they don't shovel the road, so we wouldn't have a hard time to go where we want to. Now we have a hard time convincing Hydro Quebec to shovel the roads. In Great Whale, it will be the same. Hydro hasn't kept its promises.

When we think of Hydro, we lost a lot of confidence in everything. They lost their land.

What about Great Whale?

We feel pity for them, because they're going to have the dam. We tried to stop the LG-2 dam. They didn't listen to us. They went ahead. What happened to us - the same thing is going to happen in Great Whale. They won't be able to drink the water, or eat the fish from the Great Whale River.

Have you noticed much change in the quality of the water since the dam?

A lot of changes. ... They don't like drinking the water from the reservoir because it looks yellow, doesn't taste well. Here in the community, since the first winter at LG-2, since they first built the dam. That's when they first heard the water was bad. The doctor told the people not to drink the water. It was not good from the river. Some of the people don't like drinking from tap water. The doctor said to boil water before drinking. They [Pachanos] go in the road to get fresh water.

Do they buy bottled water?

Sometimes they buy bottled water from the store. But they don't use it for tea. [Why not?] It turns tea black. One thing they don't like - it changes the tea black.

Johnny Swallow

[In English (untranslated)]

So, you were saying you only heard about it [Mercury] through the doctors.

Yeah, there's no way we can find out, us Indians. We don't have anything to find out with.

How did you first learn about it? When did you first hear about it?

Well, it already happened before we came over here. They did a blood test sometime. And after a while, they confirmed that we had mercury.

They told you that you had mercury?

Yeah, well, not very much. I used drugs for that and got rid of it.

They gave you pills for that?

They gave me pills. That causes them.

How long ago was this?

I don't know exactly, but before they started with the James Bay Project.

That was before the dam started?

Yeah, must have been in the seventies.

I'd heard they sent some people down south for tests in the hospital in Montreal. You weren't one of those, eh?

No, no.

Do you know any body who was sent down for tests?

No.

When they first told you about the mercury, what did they tell you? Did they give you much information?

They told us where the mercury comes from - from eating fish.

But this was before the dam, eh, so ...

Yeah.

Were there many people who had high levels of mercury then?

Well, I don't know. Only my family, I don't think there was anybody who had the mercury.
You were the only one.

I must have eaten a lot of fish that time [laughing].

Where umm?

What kind of fish has the most mercury?

Well I can only tell you what I've read and been told, because I don't study fish. I think it's pike and walleye, I think the French call it doré. What do you call it?

Uga. That's one kind of fish that I don't like very much. I don't think I got mercury from that kind of fish.

What sort of fish do you eat?

Well, in the wintertime, in the hunting camp, we eat lake trout, pike, and whitefish. And suckers.

Where do you do most of your fishing?

In the summertime, we do our fishing along the coast. In the wintertime, we go up in our hunting camp.

Where's your hunting camp?

Up past LG-2 anyway. Near the Kaniapscow River. They call it the Kaniapscow River.

So you don't eat much of that pike or walleye?

We eat it sometimes, but we don't eat it for every meal.

Do you feel like the mercury has had very much of an effect on your life or the way you live.

No. No.

No? So you haven't had to change where you fish, or how much you fish or anything like that?

No.

What do you think about the mercury? Do you think it really makes people sick, or what's your own feelings about that?

Well, I don't know, because I'm not a doctor. I don't know what to say about it. ... Well anyway, what does it affect to have the mercury in your body?

I guess that's the ... You're asking me, eh?

Yeah, I'm asking you [laughing].

I guess that's the big question that they're trying to answer. They know ... again, I can only tell you about mercury from what I've read and been told myself. But ... they first got to be worried about mercury because of poisonings in other places - in Japan and Iraq, which were different in a way from here, because it was high doses of mercury in a

short period of time. In Japan, there was a factory dumping mercury right into the bay. And in Iraq, people got poisoned because there was mercury in grain which was supposed to be planted -it was fungicide to kill the fungus, but people ate it instead. So they had really high levels, they were a lot higher than here. In those cases, they had really bad effects. There were children born deformed and mentally retarded, people went blind, couldn't walk, all sorts of problems with the brain and the nervous system. Now, the dose is really important. I mean I could give you a medicine, and in the right dose it might help you, but a whole bottle might kill you. So here, the dose is really different. At the doses around in the fish, one of the big questions they're trying to answer is 'Just how dangerous is it?' The things they kind of worry about are troubles with the nervous system -vision, hearing, shaking, weakness, stuff like that. I don't know if that answers your question.

Like, me, since I heard about this mercury, it doesn't worry me one little bit. I'll eat fish anytime I want. Even pike. I like pike. It doesn't worry me a little bit. Because they told us that lake trout is one of the fish that has the most mercury in it. We catch lake trout in our place in the wintertime - a lot of them. Big ones and small ones. We eat lake trout any time we want to. It doesn't worry us about mercury.

So you feel like it's pretty safe and the mercury doesn't bother you?

No, no.

What is it that they tell you about the mercury? Where do you get your information about the mercury?

Well, it hasn't been done that we've been told exactly what's going to happen, that we have a lot of mercury. No way that they've explained that to us. They only said that we have to reduce how much we eat the fish. That's the only thing that they told us.

So, do you feel like you're getting the right information, or you're not getting the right information?

[Laughing] They might be right in reducing eating fish. They might be right. Because us Indians, we've been brought up since we were a child, we've been brought up by fish. Maybe that's the only thing that they had most of the time in the wintertime when they couldn't get anything else.

Do you trust the people that are giving you information about mercury? Do you think they are telling the truth?

I trust them, I can't say that I don't trust them. They might be right. They might be wrong.

How about the dam? Do you feel that's had much of an effect on your life?

All the way through. I go past the dam, I don't do much fishing on the reservoir. I tried it once in the fall, and we caught a lot of whitefish, and pike, lake trout. We kept that fish through the fall. What we do when we keep fish for a long time is we smoke it. That's how we keep the fish for a long time when we don't have a freezer to put them in the freezer. I might be sending the mercury down in Eastmain because my daughter, she's married over there. When she want fish from us, we go out and catch fish from the coast and after we come back, we send her some fish. Last Saturday she came up and she

brought me a sturgeon from Eastmain. We might be receiving mercury by doing that [laughing].

I guess there's not much sturgeon around anymore.

No, no. There used to be a lot of sturgeon in the LaGrande.

Long ago?

Before they made any dams.

Do you know anybody who's become sick because of the mercury?

No, I don't know.

Do you know Dr. Dumont?

Very well, that's my doctor when he comes here. Because I got sickness.

What sort of sickness?

Parkinson's. ... That's the sickness I have. I have to meet with him every time when he comes.

How long have you had that sickness, the Parkinson's?

It started in '81 - ten years?

Ten years ... Are you taking medicines for that?

Yeah, medications ... four times. I have to take it four times a day.

What causes that? That sickness?

Well, I don't know. They never told me about that.

What did they tell you about that Parkinson's?

Well, they told me that's one kind of thing they can't cure. You have to live with it. The only thing they can do is give me medication for it.

Does it help much?

It helps quite a bit. I only started another kind of medication in June. That's through Dr. Dumont. He told me that's a new kind that they have. 'That's new medicine', he said.

How's your health other than the Parkinson's?

It doesn't do very much. Right now I don't feel sick. The only thing - I shake a little.

Is there any of that in your family?

One of my girls, she had epilepsy. She's had that for a long time. It started when she was six years old. Now she's twenty. She stopped not long ago, about 2 years.

Have you had a stroke or anything like that?

No.

Do you see many changes in the game or the fish?

Not really that I know of.

So you don't feel like the dam has made much change?

Well, the dam has changed quite a bit. Because we're not allowed to fish in the reservoir for a while.

Was any of your hunting area flooded?

No. I go past the north side of LG-3, about 60 kilometres from the reservoir.

Do you ever have people coming on to your territory?

Yes, about one or two families stay with us in the wintertime.

You haven't had any robberies or anything on your land.

No, no.

What do you think of the research that's being done here on mercury? You ever get your hair tested?

I don't know, because they haven't told us what they find. They haven't told us for a long time. I don't know about the other people, if they get any information about the mercury. I haven't heard that for a while.

Did you get one of those graphs that they gave out with the mercury testing? I've seen some of the people getting that stuff.

You mean the blood tests.

The hair tests, I mean.

That's what they do with the mercury tests. Only we haven't had that for a while. Quite a while we didn't have that.

Do you have many brothers or sisters?

I only had one brother. He died quite a while ago. In 1953 or 54. I had only one brother in my family.

What did he die of?

Same thing like I said, my girl had epilepsy. My brother died with that. He had big problems with that. He was older than me, two years.

Something I've been wondering about - this isn't related to the mercury at all - do you ever find sick animals or sick fish or anything like that?

Yes, sometimes we find on the fish, like whitefish, the kind we get from the lake.

What do you find with them?

Worms. They have worms in their guts. And sometimes in the sucker.

Is that very common?

No, not too often.

Is that a recent thing or something that's been around like that for a while.

Yeah, it's been around like that.

Since before the dam?

Yeah.

What do you do when you get fish like that?

We just throw it away.

How about game, like bears, foxes, caribou?

Well, last year, not this year, there was a family hunting very close to us and they found a moose, a young moose cow frozen stiff, standing up.

Standing up?

It was frozen solid like that, standing up in the snow, in the bush. And that guy didn't know what happened to it. This moose wasn't even shot.

Do you have any ideas about why it might have died?

And there was another family this winter, and we can talk to them on the radio quite a ways away. They said they killed a moose, and this moose was not a young one - an adult. And they found the liver of the moose was ... something wrong with it, and they had to burn the moose. And they had to burn the moose, every bit of it. They couldn't use it.

Why was that, just because the liver was bad or was the rest of it also bad?

I don't know - sickness.

Is it normal to burn animals if they have sickness?

Well that's what we do not to leave it lying around. We can't just leave it there. We have to destroy it by burning.

If you found an animal that just had sickness in the liver, would you eat the rest of the animal, or would you destroy the whole thing?

Oh, yes, I'd destroy it.

Is this something new, finding animals like this, or do you get the occasional one going way back.

I've never heard of it. I've never heard of anybody finding anything. Same thing happens in the caribou.

How do you mean the same thing?

Dying.

What's killing them, do you know?

Somebody was going to study for that, but I don't know what they're doing.

Do people talk much about what might be causing this?

No. I've seen them myself, those caribou, laying on the ice, or river. The last two years, 1990, 1991, like I said there's nobody hunting there going to shoot the caribou who are dying. They just die like that.

Very many of them dying like that.

Quite a few.

When you say quite a few, that could mean different things to different people. Do you mean 3 or 4 or 30 or 40?

Yeah, like that I guess, could be more.

What do you do when you find a dead caribou like that.

You have to take it and put it underground and not leave it in the lake.

So these are in the lake sometimes?

Sometimes. In the lake or on the ground.

Do you burn them or bury them or ...?

They told us when we can to get rid of it. That's what we did, when we can, we burn them. When we don't have time to burn it, then we just put it on the ground. We don't leave it on a lake or river.

When you say they told you, who told you that?

That's Cree Trappers [Association].

Do they have any idea what's causing the caribou deaths?

That's what I wanted to know myself, because somebody was going to bring the heads or the liver or the guts, so they can bring them to the hospital here and make a study of it. I don't know if somebody did that. ... Sometimes, other kinds of animals feed on that, the dying things - like wolves, fox, martin - they feed on that.

What happens if they feed on that stuff?

I don't know. They seem to be enjoying it, at liberty [laughing]. The same thing happens when people eat fish with mercury, they have mercury in them, same thing with animals. ... They must have a load of mercury to die on it.

I guess so.

I mean, those animals dying like that.

You think that's due to the mercury?

[laughs, something untranslated in Cree]

It's hard to say, eh?

Has anybody told you about those things?

Yeah, I've heard from a few people about animals dying. I think everybody's wondering what's causing it. Me too, I don't know. Do you know if that's mainly in one area, or is it everywhere like that? Inland and on the coast?

Yeah. Mostly the people inland talk about that, as seeing dead moose, caribou.

[Translator]: Because we have a lot of caribou on the coast and I've never heard anything like that there.

Were you here in the seventies? [Yes] *Did they show a movie here about mercury in Japan?*

I don't know.

Did you ever here about a movie like that being shown here?

No. [Then Harry] I've never heard of it either.

What did they tell you then in the seventies? Did they say 'Stop eating fish' or 'Stop eating particular kinds of fish'?

They didn't ask us to stop completely. They just told us 'Reduce, eat less.'

Have a lot of people stopped fishing or changed how much fish they eat?

I don't know. I've never tried to find out from other people.

Do you have any questions you would like to see answered. Not that I can answer them now, but are there any questions I can include in my report.

I guess the only thing I wanted to know is the information what the cause is, and why it's staying like that. ... Even the rabbits, they are dying fast, died last year.

Where people catching any sick rabbits?

They've been talking about the rabbits there. They seem to be dying.

Thanks for taking the time to talk to us.