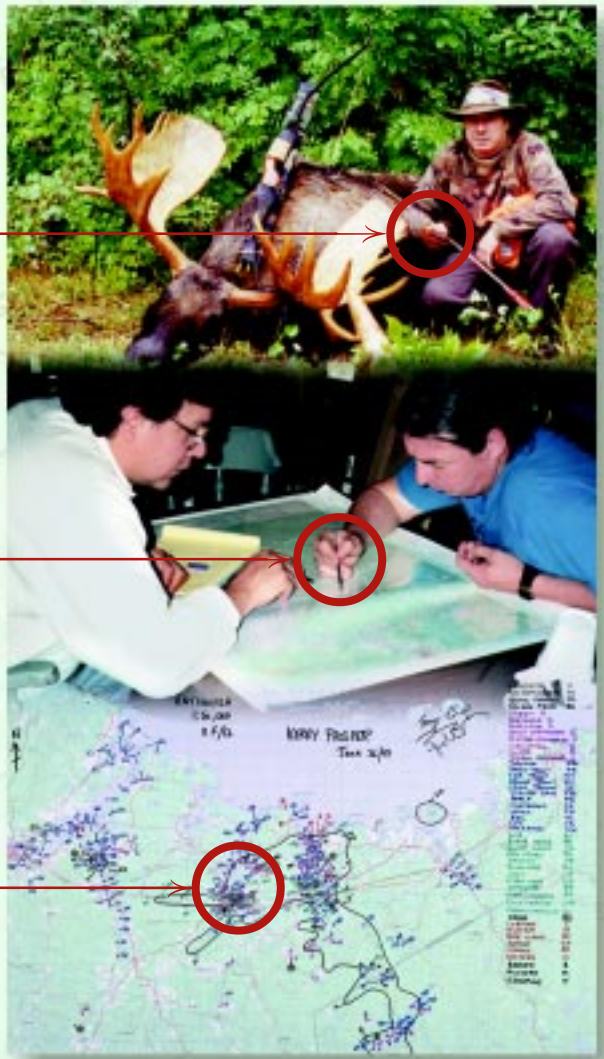
CHIEF KERRY'S MOOSE

a guidebook to land use and occupancy mapping, research design and data collection



by Terry N. Tobias

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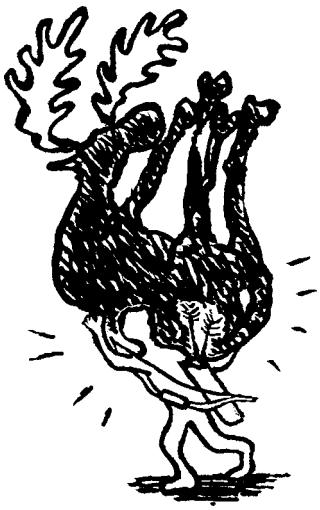
THE FRONT COVER

The top photograph *on the front cover shows Kerry Prosper, who was Chief of the Afton First Nation at the time, with a bull moose he killed in 1995 to feed his family. This particular hunt was believed to be the first time in generations that a Mi'kmaq hunter killed a moose using a recurved bow. For this reason, this hunt held some symbolic importance for the nation.* ***The middle photo*** *shows James Michael, Director of the Treaty and Aboriginal Rights Research Centre of Nova Scotia, conducting a land use and occupancy mapping session with Kerry in 1997.* ***The bottom photo*** *depicts one of Kerry's map biography overlays that resulted from the interview. One of the hundreds of sites mapped is the location in the French Lakes area of Cape Breton where Kerry knocked down that moose.*



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a guidebook to land use and occupancy mapping, research design and data collection

Part one in a series of publications intended for First Nation researchers and decision makers, illustrating best practices in land use and occupancy research and mapping.

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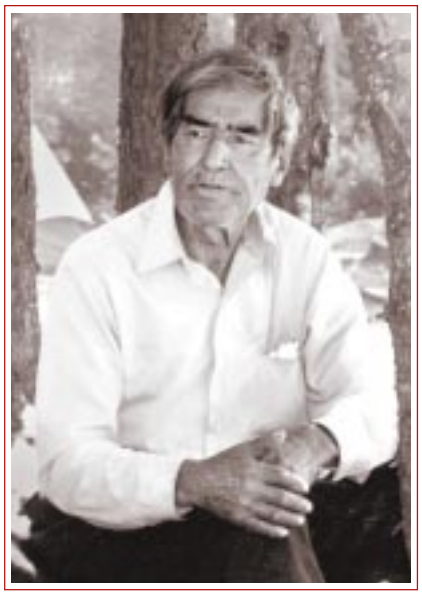
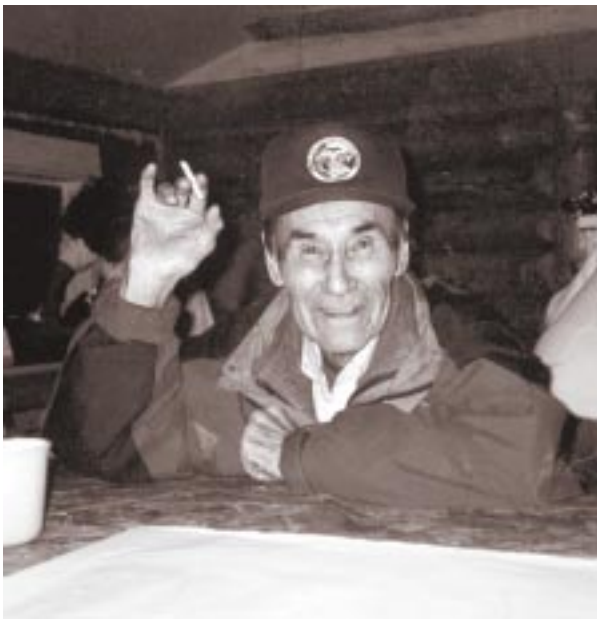


Bazile Decoursay
1928–1993

To Elder Bazile Decoursay, and all the elders whose knowledge and wisdom continue to enrich and revitalize the younger generations of both First Nation and non-native peoples.

and

To Dr. Peter Usher and Dr. Martin Weinstein, generous colleagues and mentors, and leaders among those who pioneered the Canadian land use and occupancy research methodologies that are now being adapted by indigenous cultures around the globe.



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Foreword

Information – access to it, or access denied – has long been at the root of how communities have expressed who they are, to themselves and outsiders. The oral traditions of First Nations have been – for hundreds of years – cherished and deeply respected ways of communicating complex information about culture, politics, the environment, and what we now call economics. After European contact, these oral communications were given less and less weight, and First Nations were put at a profound disadvantage in negotiating about their lands and resources. Just a few years ago, I remember talking to a provincial cabinet minister about forestry operations that were going to have a serious negative impact on Algonquin lands and the Algonquins' ability to sustain themselves. The minister said, "Prove it to me!" Clearly, words were not sufficient. That was a seminal moment in my life, and in my work.

It became clear to me that sure, we had anecdotal testimony, but that was not good enough. How can you demonstrate that the activities of outsiders are affecting your survival? It is so difficult to prove to the non-native establishment that you've got rights. You have to be able to show the impact to a people who are not themselves land based. So you need to draw them a picture. That's what land use and occupancy mapping is all about.

This has become even more important following the 1997 landmark Supreme Court of Canada ruling in *Delgamuukw*. Although the court found that oral testimony does have weight in law, the court also underlined the

need to demonstrate physical occupation of territory in order to prove Aboriginal title. The only way you can prove physical occupation is by telling the court, "I was here, I have a house here, I have a trapline here, hunt small game over here ... " All these are markers of occupancy, and the only way to prove occupancy is by having a map that sets out the evidence in terms the people across the negotiating table, or a judge, will understand and accept.

For many First Nations though, the question is, "How to get started in the right direction so that our maps end up really serving our community and nation?" This is where Terry Tobias' guidebook on use and occupancy mapping will be an extremely useful and timely tool. It is aimed at the community level – for researchers, lawyers and planners working in Aboriginal and treaty rights research and natural resource management.

I have been working in this field for about 18 years as a lawyer, advising First Nations in the preparation of evidence both for court and negotiation purposes. In all these years, my experience has been that there is not enough attention paid to methodology and detail. As the competition for scarce natural resources increases it can be expected that research standards will be more closely scrutinized by governments, courts and third party interests as our nations seek to establish Aboriginal title to lands and resources. Therefore, it is important for First Nations and their advisors to know how to do this research and how to do it well.

Terry Tobias' work provides sound guidance in this regard by an individual who is accomplished, credible and experienced in this field. I'd like to add that credit is due to the Union of B.C. Indian Chiefs and Ecotrust Canada for helping bring this important project to fruition, and getting this guidebook to communities where it is desperately needed.

So take heart. The research is worth the effort. Years ago the minister made his challenge, "Prove it!" And in those days, no logging company ever asked the Algonquins where they could cut. Now they don't cut without asking the permission of the Algonquins.

David C. Nahwegahbow, LL.B.

David is a Anishinabe lawyer from Whitefish River First Nation near Manitoulin Island, Ontario. He practises Aboriginal law and has an office in Ottawa. David is also President of the Indigenous Bar Association in Canada.

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I would like to acknowledge the many hundreds of elders and interview participants whose knowledge, patience, criticism and humour at the mapping table has helped my ongoing learning about how to assist First Nations with the design of their cultural mapping projects.

I would also like to acknowledge those who have in quiet and important ways been my mentors over the years, in the arena of land use and occupancy research: Dr. Peter Douglas Elias, Dr. Harvey Feit, Dr. Peter J. Usher, and Dr. Martin Weinstein.

In 1982 George Smith and the Northern Village of Pinehouse invited me to live in their community and help design research that would demonstrate the importance of traditional resources to their way of life. In preparation, I wrote Martin Weinstein and asked his advice. He sent me a copy of Dr. Hugh Brody's beautifully written book, *Maps and Dreams*, which was then just hot off the press. That book documented the Union of BC Indian Chiefs groundbreaking and successful attempt to employ land use and occupancy mapping to help stop the construction of a pipeline. In some ways then, things are coming full circle with *Chief Kerry's Moose*, another UBCIC initiative. I would like to acknowledge the president of the UBCIC, Chief Stewart Phillip, and Leigh Ogston and all the other personnel whose ongoing endeavours are providing quality guidance, reference materials and conferences for First Nation researchers at the community, regional, national, and international levels. I would like to thank once again George Smith and all the people who welcomed me into their community almost two decades ago, and who were so good to me during my Pinehouse years.

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David Nahwegahbow provided the foreword for which I am grateful, and he, Chief Arthur Manuel, and Chief Leonard George kindly provided some words of support for the back cover. Justin George graciously helped obtain Chief George's contribution.

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Introduction

Aboriginal peoples in Canada have been mapping aspects of their cultures for more than a generation. Indians, Inuit, Métis, non-status Indians and others have called their maps by different names at various times and places: land use and occupancy; land occupancy and use; traditional use; traditional land use and occupancy; current use; cultural sensitive areas; and so on. I use "land use and occupancy mapping" in a generic sense to include all the above. The term refers to the collection of interview data about traditional use of resources and occupancy of lands by First Nation persons, and the presentation of those data in map form. Think of it as the geography of oral tradition, or as the mapping of cultural and resource geography.

Think of it as the geography of oral tradition.

Most aboriginal communities in Canada – even some of the urban ones – have done this type of mapping. Some have completed whole series of map projects, each presenting a different theme. Others are now updating maps they first compiled years ago. People are busier than ever in their efforts to map various dimensions of use and occupancy. There is a good chance your community has recently done such a project, is doing one now, or is planning one. Possession and control of cultural data translates into considerable political power, at both the negotiating table and in court.

Governments probably will not drop extinguishment and surrender from their agendas.

Many land use and occupancy studies document the locations of natural features that are considered especially sacred or spiritual. Jayne Konisenta, Petr Cizek and Peter Marcellais, Chief of the Nahanni Butte Dene Band, pose on the frozen Nahanni River, Northwest Territories. In the background is Nahanni Butte, the feature from which the band takes its name. Community members identified the mountain as a sacred site during their mapping project.

Good quality mapping can be used in support of many different projects, some of which are listed below.

- Documenting elders' oral history before more knowledge is lost.
- Determining shared use areas and reconciling boundary conflicts between neighbouring aboriginal communities.
- Providing evidence for court cases involving aboriginal rights and title.
- Settling treaty and claims under federal land claims processes.
- Supporting compensation claims.
- Negotiating co-management agreements.
- Negotiating protective measures and benefits from industrial development.
- Determining probable impacts of development.
- Supporting injunctions to stop unwanted development.
- Providing baseline data for long-term community planning and resource management.
- Supporting administrative programs such as land use permitting.
- Developing education curricula.

Any group with aspirations to meaningful self-government and recognition of rights will engage in this kind of research. Governments probably will not drop extinguishment and surrender of aboriginal title from their agendas, although they may use different words for them. The need to do cultural research will remain as important as ever. Your grandparents' and parents' knowledge about their cultural pursuits and use of resources is central to getting recognition of rights in today's political climate. Similarly, the ability to document your own and your childrens' land and water-based activities may be critical for proving title and rights in the decades to come.

Even in a friendly political climate, an aboriginal government must acquire, update, and control access to an inventory of its people's cultural resources. Self-government requires the capacity to manage resources. Baseline inventories of cultural sites are needed and periodically need to be refined, verified and updated. Culture is not static or fixed in stone – patterns of occupancy and use change over time. There will always be a need to do good research, whether this involves collecting an initial baseline inventory or doing subsequent monitoring for change.

Many First Nation groups and communities have expressed concerns about a lack of clear direction for generating maps that will serve them well. This guide offers some ideas and recommendations that will result in

the construction of good maps. It is based on almost two decades of experience designing land use and occupancy mapping projects, and working with indigenous peoples at the community level to collect the data they need. The recommendations are grounded in hard experience of what has and has not worked for these kinds of projects.

This book is for leaders, administrators, and program personnel at the community or First Nation government level, as well as their consultants and external research people, and community researchers who have had experience with similar kinds of studies. The information and ideas contained here should be of use to anyone who has the responsibilities of designing mapping projects and providing guidance to community interviewers.

The recommendations are grounded in hard experience of what has and has not worked for these kinds of projects.

What follows is a consideration of the key factors that lead to success for aboriginal mapping. I do not offer a simple formula, or off-the-shelf methodology, that can be applied across the board. This is impossible. There are so many different reasons that research is done, a huge range of cultural and linguistic diversity among Canada's indigenous communities, and enormous contrasts in various nations' relationships to resources. The lifestyles of an urban community, and its dependence on traditional harvesting, are very different from a northern village's.

The discussion starts with what land use and occupancy mapping is about and cautions you to consider an important distinction between use and occupancy. I then outline the tasks involved. The concepts of map biography and map composite are introduced with the help of samples from a particular project. The guide then emphasizes the importance of quality data, and goes on to stress that although people tend to underestimate the challenge of obtaining good data, it is straightforward once you know how to conduct what is called social science. The importance of avoiding the museum approach to mapping is highlighted, followed by a look at how to lay the groundwork for good research. Obtaining and training good personnel, taking control of research design, and respecting your workers' limitations are discussed. Special attention is paid to response burden, the factor that most commonly undermines research. The five defining characteristics of any project (the why, who, when, where, and what) are discussed, along with the principles guiding research design and implementation, the measures of quality, and the culture of research. The guide ends with a summary of recommendations. There is a glossary at the back to help the reader with terms that may be unfamiliar.

In addition to natural features, sometimes human-made structures are considered to have a special spiritual significance and are mapped as sacred sites. Many Inuit consider their Inuksuit sacred and locate them on maps during land use and occupancy projects. This Inukshuk is near Pangnirtung on Baffin Island, Nunavut.

1

Land Use and Occupancy Mapping: A Definition and a Warning

Despite the tremendous diversity among First Nations they all share one thing – the harvesting of fish, wildlife, and plant materials has been the historical basis of economic life. Many aboriginal communities remain dependent on wild mammals, birds, fish, other creatures, and undomesticated plants to feed and shelter themselves. In the pursuit of the resources that continue to be the foundation of their cultures, people leave traces over the landscape, evidence that they have been there. Many of their activities leave no visible evidence, however. Instead, they etch themselves in the minds of those who travel their homeland in search of physical and spiritual sustenance.

First Nation peoples carry maps of their homelands in their heads. For most people, these mental images are embroidered with intricate detail and knowledge, based on the community's oral history and the individual's direct relationship to the traditional territory and its resources. Land use and occupancy mapping is about documenting those aspects of the individual's experience that can be shown on a map. It is about telling the story of a person's life on the land. Over time individual experience becomes part of the collective oral tradition, a story of much grander proportions. In this respect, use and occupancy mapping is a means to help record a nation's oral history.

Mapping is not just about obtaining a set of maps. There are other benefits that arise from the process of obtaining them. When properly done, use and occupancy interviews increase the participants' awareness of their

Elder Peter Hunter and Stan McDonald of the Wolf Lake First Nation take a break during Peter's map biography session in Temiscaming, Quebec. Land use and occupancy projects provide a great opportunity for individuals of different generations to share their experience, information and knowledge.

Land use and occupancy mapping is about telling the story of a person's life on the land.

connection to territory. People are usually surprised to see how much they have used their land. They often have a new-found sense that their activities as individuals are part of a larger picture involving the whole community. Mapping always gives rise to a heightened awareness of aboriginal rights that have been denied, and an increased willingness to be involved in strategies to right long-standing injustices. There are opportunities for individuals of different generations to share their experience, information and knowledge.

Elders from different villages are often brought together, renewing bonds between communities and strengthening the First Nation. Overall, land use and occupancy mapping helps to invigorate a people's pride in its cultural heritage. In addition, the administrative and technical capacity acquired through successful mapping projects increases the nation's abilities to administer and manage its territory.

Elders Felix Tale of the Pehdzeh Ki First Nation and Leo Norwegian of the Liidlii Kue First Nation share stories at the Horn Plateau, Northwest Territories, during a workshop to design a protected area for the plateau. Use and occupancy maps often get used in ways that bring together elders from different villages, which helps keep the bonds between communities strong.

Listed below are some of the types of land use and occupancy information that have been mapped by aboriginal groups.

- Places where animals are harvested for food, clothing, medicines, tools, and other purposes.
- Places where plant materials are harvested for food, clothing, medicines, tools, shelter and fuel.
- Places where rocks, minerals, and soils are collected for making tools, conducting ceremonies, and other purposes.
- Ecological knowledge of habitats and sites critical to the survival of important animal populations; for instance, caribou migration corridors, islands where moose calve, waterfowl breeding grounds and staging areas, and spawning beds.
- Habitation sites, such as settlements, trading posts, cabins, camps, and burial grounds.
- Spiritual or sacred places such as ceremony sites, rock paintings, areas inhabited by non-human or supernatural beings, and birth and death sites.
- Legends and other accounts about specific places.
- Travel and trade routes.
- Aboriginal place names.

Dr. Peter Usher, one of the pioneers of land use and occupancy methodology, has made an important distinction between "use" and "occupancy." He regards some of the above kinds of information as evidence of one or the other, but not both. Peter has looked closely at this distinction while examining First Nations' maps, and his work indicates that it is critical to pay attention to the difference between use and occupancy when using maps in certain political processes.

The following distinction draws directly from Peter's work:

Use refers to activities involving the harvest of traditional resources; things like hunting, trapping, fishing, gathering of medicinal plants and berry picking, and travelling to engage in these activities. For any given community or nation, use occurs over a specific geographic area.

Occupancy refers to the area which, as Peter puts it, a "particular group regards as its own by virtue of continuing use, habitation, naming, knowledge, and control."

These two geographic areas are usually different in extent. Use mapping documents the locations where activities like hunting, fishing and travelling occur. Occupancy mapping, by contrast, records the following types of information: stories and legends about places; ecological knowledge of places; indigenous place names; habitation sites like cabins and burial grounds.

The geographic extent of use tends to be larger than the extent of occupancy, and in Peter Usher's words, "limits of occupancy are likely to be much more stable over time than the limits of use; the mapping of occupancy, in contrast to use, would normally reveal both much less overlap and a more obvious boundary between aboriginal territories" (Figure 1).

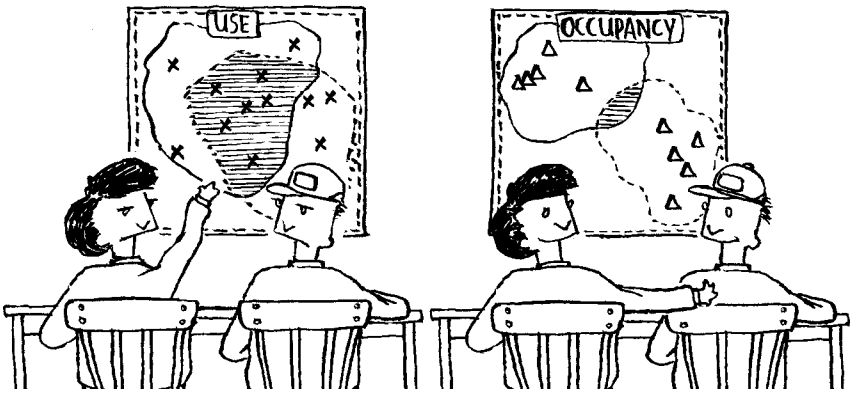


FIGURE 1 **Use Versus Occupancy**

For many neighbouring nations, territorial limits based on the mapping of use – the harvesting of traditional resources – probably generates a lot of artificial overlap. A problem is that infrequent and far flung trips to obtain animals and plants, often with the permission of the adjacent nation, get included. The mapping of occupancy – locations about which people have knowledge of ecology, legends and indigenous place names, and where they have built habitations and buried their dead – is likely respectful of the nations' true territorial limits while generating less overlap. Negotiations based primarily on occupancy would, it seems, be more constructive in reconciling First Nations' interests.

The really important point that Peter makes is that the overlap problem in current claims processes is probably the result of mapping use instead of occupancy. Claims based on mapped occupancy would almost certainly generate less boundary conflict between nations, while still respecting nations' own understandings of their territorial limits. Land claims processes get seriously bogged down because of the overlap issue. This may serve non-native government agendas, but it frustrates the aspirations of aboriginal peoples. If you are going to use data to identify territorial boundaries for purposes of land claims, think about whether it is in your best interest that the negotiations be based primarily on occupancy data.

2 The Tasks of a Mapping Project

Research Director Russell Diabo displays the stack of overlays, audiocassettes, and research notes produced during the Adams Lake and Neskonlith Bands' land use and occupancy study, near Chase, British Columbia. A typical community project will usually yield as much material, which contains the raw data.

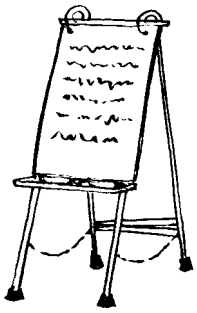
An ideal use and occupancy mapping project includes all of the tasks discussed below. Successful projects include most of them. The tasks obviously have to occur in a general sequence, but in practice the steps are not as linear as they appear. Some of them require months to complete. To meet project deadlines, it is usually necessary to carry out certain tasks at the same time.

The first four tasks produce what is called raw data, which are the many thousands of individual datum, or facts, contained on interview audiocassettes and participants' overlays and maps. Tasks 1-4 take you to the end of the data collection part of land use and occupancy mapping research, and they are the subject of this guide. Tasks 5-13 occur after the data are collected. They are discussed briefly below to provide a sense of the things you will have to do with the raw data to get them into forms that are useable; for example, reports, databases, or community map sets. These are often referred to as research product.

TASK 1 Development of Community Consensus

There is no point starting a land use and occupancy mapping project unless people in the community want it to happen. There must be a substantial number of individuals willing to participate. Seemingly obvious, this requirement is sometimes lost sight of in the flush of excitement when funding becomes available to do research. Community support is one of

the three key factors that must be in place for use and occupancy mapping to succeed. (Its importance is discussed in *Laying the Groundwork for Good Research* in Chapter 4.)



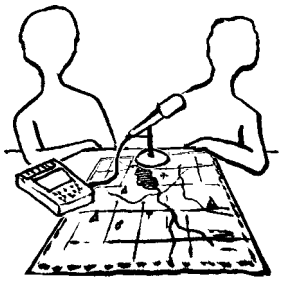
TASK 2 Hiring and Training Personnel

The second key factor for success is the team of people who do the interviewing. These individuals must have dedication to the project and the skills needed to collect data from community members. (Discussion of *Research Personnel and Training* appears in Chapter 4.)

TASK 3 Development of Research Design and Testing of Interview Guide

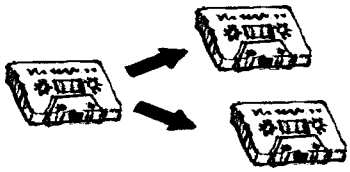
Data collectors will be using an interview guide when they ask community people for their use and occupancy information. The interview guide points to the third factor that must be in place for the mapping to succeed. It guides the asking of questions, and is the most concrete expression of research design. (This entire book is about research design, but the following sections are most to the point: Chapter 4: *Avoiding Response Burden*; Chapter 5: *Designing the Project;* Chapter 6: *Principles of Research Design and Implementation;* and Chapter 7: *Measuring Quality*.)

TASK 4 Interviewing Participants and Collecting Map Biographies



Use and occupancy data are collected using a standard method known as the map biography. This is a face to face interview during which the participant indicates on a map the places he or she has harvested resources or gone to for spiritual purposes. In some cases the participant also marks places that he or she has never used or even visited, but has knowledge about. (See Chapter 3: *Map Biographies and Composites.*)

TASK 5 Replication and Storage of Raw Data



After data are collected, it is a good idea to make copies of the maps and tapes that contain them. Most nations now recognize the importance of having back-up copies of all raw data, because many communities have lost irreplaceable data through fire, vandalism, water damage, or simply by losing track of materials when community administrations change or move from one building to another. Videocassettes, audiocassettes, and research notes can be easily copied, and maps or overlays can be reproduced using a variety of processes including photography and blueprinting. Copies and originals should be stored in separate and secure locations. One nation carefully copied all its raw data, then stored the copies alongside the originals. An arsonist torched the building, destroying years' worth of data, much of it from elders who had passed on.

TASK 6 Translation of Indigenous Language Interview Tapes

Sometimes it is necessary to have all the interviews done in the indigenous language. For instance, some use and occupancy mapping involves getting information that is best expressed using the first tongue, things like ecological knowledge and aboriginal place names. Other kinds of data can be as easily obtained using English or French.

Is it necessary to interview all participants about where they harvested resources or travelled or camped on their territory, in the indigenous language? Although ideally this would be preferable, the question raises two important issues.

- Many communities now have only a handful of people who understand the old people's vocabulary and their way of using language well enough to make a good translation of their language.
- Translation work is very time consuming, which means it is also expensive.

Many communities have lost irreplaceable data through fire, vandalism, water damage, or simply by losing track of materials.

These two factors can create a situation where the audiocassette data are temporarily, even permanently, unavailable. Also, because of the intensity of translation work and the possibility of burnout, the best research design might involve using your skilled translators only when they are really needed.

Obviously, any elder who does not speak English or French, or who has a strong preference to be interviewed only in their first language, should have her or his wish respected.

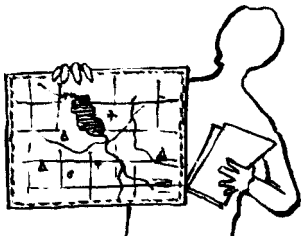
TASK 7 Transcription of Audiocassettes

Interview tapes contain raw data that need to be converted into written or typed form, called transcripts, so that they can be turned into a useable research product like a report. Whenever possible transcripts should be input into a computer because a word processor allows users of the data to search for information electronically.

Sometimes it is necessary to make verbatim transcriptions, in which every word heard on the tape is recorded in the transcript. This is very time consuming and expensive, requiring about nine hours of labour for each recorded hour. It should be undertaken only when really necessary so that more of the project's budget can be used for other tasks. It may be necessary to make verbatim transcripts in preparation for court, but is it necessary to do so when producing a report for presentation at a co-management table? A lot of material can be transcribed using a non-verbatim approach, requiring perhaps three hours of labour for each cassette hour.

TASK 8 Review of Transcripts and Map Biography Data

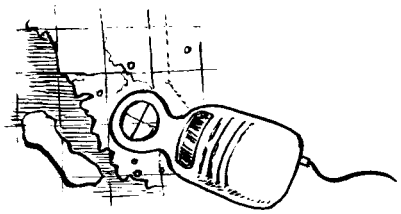
In this task the reviewer carefully reads each participant's transcript while checking the data that were marked on that person's overlays or maps during the interview. There might be a checklist of two or three dozen items that have to be kept in mind while looking at each overlay. This review has three main purposes. One is that the material in the transcript is checked for consistency with the material marked on the overlays. Any contradictions, omissions, or other problems are noted for clarification by the participant. A simple example would be a burial site on the map that is not mentioned in the transcript. Two, the reviewer also makes sure everything marked on each overlay follows the rules the interviewers were supposed to use during data collection (Task 4). Are the titles and labels correct, map symbols readable, and polygons completed? This process makes the digitizers' job (Task 9) much easier and shorter. The third main reason for doing the review is that all the transcript data are coded, in the margin of the transcript copy, in preparation for database entry (Task 11) and report writing (Task 13).



TASK 9 Digitizing Data on Map Biographies and Producing Digital Composites

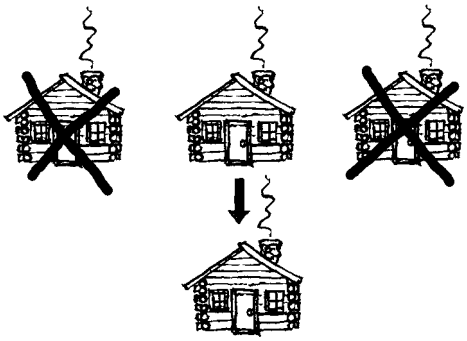
Digitizing is the process of converting data that have been marked on overlays or paper maps into electronic form. Data are stored in a computer running geographical information systems (GIS) software, which is a mapping software program. All the data appearing on all participants' overlays get digitized. Once they are in electronic form, they are checked against the original hard-copy maps or overlays, to make sure the digitizers did not accidentally omit data or locate some inaccurately. The digitized information can then be stored and combined in different ways. Various combinations are produced as digital composites and can be displayed on the computer screen (Task 10). They can also be printed as composite maps on paper (Task 12), again showing any combination of data. Flexibility alone makes developing GIS capacity a good investment when possible. Producing map sets by hand will meet certain limited objectives, but the disadvantage is that all that work goes into producing a set of maps that can only be used for one or two purposes. GIS costs are high, technicians need a lot of training and experience, and digitizing is time-consuming, but once the data are digitized your nation can always add new data, or go back and print out new maps that show different combinations of old data.

Flexibility alone makes developing GIS capacity a good investment when possible.



TASK 10 Elimination of Redundant Data

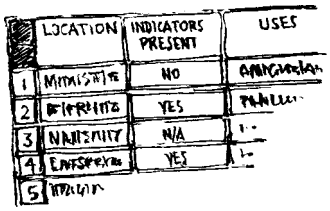
Use and occupancy mapping typically involves interviewing many individuals separately and then combining all their data on one set of maps to represent the community's ties to its territory. This process produces many duplications of mapped features. The same important sacred area or berry site or cabin might be mapped by many dozens of participants. Some individuals will consider the extent of the site to be different than others and some will locate it more accurately than others. When you combine all the data you often end up with a cluster of many markings that represent a single feature. If the maps are to be used as an inventory for management and operational planning, it is important to eliminate as much of the duplicated data as possible.



Data are never removed from the individual's map file inside the computer, but rather from the community's composite file. This is done using the GIS while looking at the data on the computer screen, and while referring to the transcript information. Decisions about which data to delete are based on several factors: the known reliability of the participants, their ability to see and read maps, their level of effort during the interview, and so on. A lot of judgment is used in this process, and it is best if the person cleaning up the data is familiar with the participants. By the end of this task you will have a set of community maps (Task 12) that shows only a single datum for each feature. This set is preliminary but it forms a sound basis for community verification (Task 12).

TASK 11 Entry of Descriptive Data into a Database

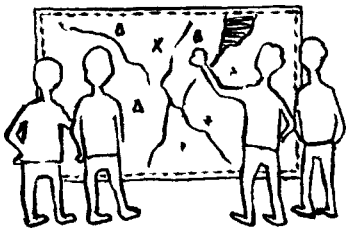
The information in each participant's transcript (Task 8) that describes the mapped features is entered into a database, on a feature by feature basis. For example, when Henry Patomogan indicated his father Martin's first cabin site, he reported that he first went there when he was about eight years old, and that he was there with Martin and Martin's brother Sam, both of whom were trapping at the time. Henry also reported that he had returned to the site many times to go fishing and also for hunting moose and snaring rabbits. The last time he used the cabin was the summer three years ago when it burned down. All these data are entered into the computer. When everybody's data are entered, the database can easily combine all the information about Martin Patomogan's first cabin site, which then represents a community history of that site. The database is very useful for report writing (Task 13), because it brings together everything recorded about any mapped feature you ask it about.



	LOCATION	INDICATORS PRESENT	USES
1	[illegible]	NO	[illegible]
2	[illegible]	YES	[illegible]
3	[illegible]	N/A	[illegible]
4	[illegible]	YES	[illegible]
5	[illegible]		

TASK 12 Verification of Community Maps

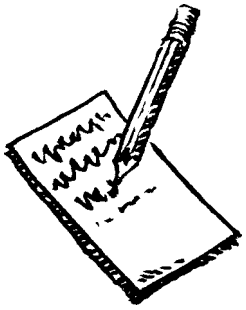
It is always a good idea to print off a set of large paper maps that display the community's use and occupancy data, and to have groups of community members examine them closely. These meetings are useful for verifying the overall quality and completeness of the mapped data. A record of all comments should be kept. Corrections to existing information often emerge, as well as additional data, resulting in an improved set of revised community maps.



There is another reason to budget for these meetings when designing your research plan. When people see their community's use and occupancy information shown on maps for the first time, they are almost always surprised and delighted. When use and occupancy research is done well, the maps are always impressive. These occasions are usually the first time that people really understand what the research project is about. They are often the first time that people see clearly how their personal stories are part of a community system, part of a much larger story. There is often a great sense of satisfaction and empowerment in this experience. Verification meetings are an important part of the research plan. They are much more than a simple exercise in getting a stamp of approval from the community.

TASK 13 Report Writing

A description of how the use and occupancy mapping data were collected is necessary if you expect people to take your maps seriously. This is called methodology, and should be as detailed as possible without breaking confidentiality. Sometimes a report may also summarize the material found in the transcripts. The exact nature of your reports can vary a lot, depending on the objectives of your project.



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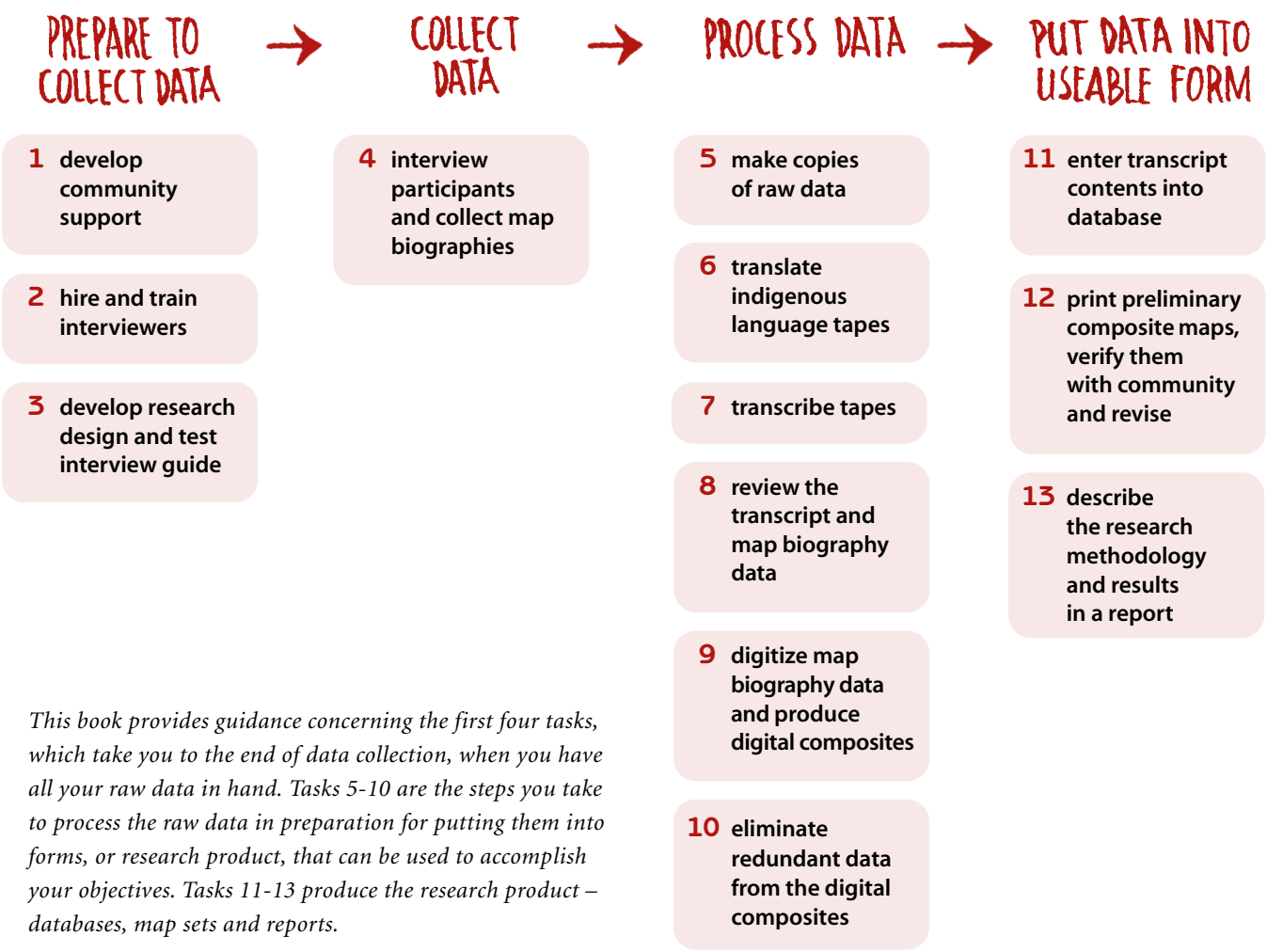
In addition to the 13 tasks shown in Figure 2 (on the following page), there is a lot of administrative work involved in a land use and occupancy project, including the development of work plans and budgets and obtaining funds. Interviewing participants is only one of a number of tasks, most of which can take weeks or months to complete. Sometimes use and occupancy mapping is started before administrators know how much budget is required for later tasks. Avoid the mistake of assuming that data collection is the sole major expense. Budget realistically for all the tasks.

It is important that people doing the major tasks shown in Figure 2 are consulting with each other on an ongoing basis. As much as possible, consultation should begin prior to the start of their tasks. For instance, you

When people see their community's maps for the first time, they are almost always surprised and delighted.

FIGURE 2 Major Tasks of Land Use and Occupancy Mapping Projects



This book provides guidance concerning the first four tasks, which take you to the end of data collection, when you have all your raw data in hand. Tasks 5-10 are the steps you take to process the raw data in preparation for putting them into forms, or research product, that can be used to accomplish your objectives. Tasks 11-13 produce the research product – databases, map sets and reports.

should think about GIS use when designing data collection procedures. You can make the GIS activities much easier by building in small details to data collection. Digitizers often have preferred ways for interviewers to label overlays, mark data, and indicate the grid locations on the map biographies.

Budget realistically for all the tasks.

The way in which interviewers, translators, transcribers, transcript reviewers, digitizers, data entry clerks, and report writers do their jobs greatly helps, or hinders, those who work with the material later on. For example, the manner in which an interviewer marks data on the overlays can make an enormous difference to digitizers, speeding up their work tremendously if the marking of symbols is done carefully. Each person involved in any of the major mapping tasks should have a solid understanding of the

other tasks, and each should have easy access to the others' methodologies. Digitizers, for instance, should have copies of the data collection methodology for quick reference. The more understanding that project personnel have about each others' methods and responsibilities, the more smoothly the project will progress.

Just as each mapping project task should be done with reference to all other tasks, each use and occupancy project itself should be done with all other past community research projects in mind. For example, you should choose a database that is compatible with databases used in earlier projects. Paying attention to database compatibility saves huge headaches and unnecessary expense later on.

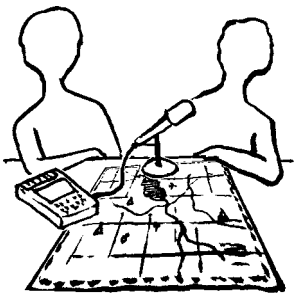
Michel Thusky of the Algonquins of Barriere Lake stands beside the stone foundation of a nineteenth-century trading post that had remained lost to historians until the day this photograph was taken. Old habitation sites like this post hold special significance to First Nations, and are usually mapped during land use and occupancy studies.

3

Map Biographies and Composites

Land use and occupancy projects typically collect data using what are called map biographies. These are face to face interviews with individuals who are asked questions about their use of the community's territory. Throughout the session the locations of the use and occupancy sites are indicated on a paper base map, or onto a clear overlay taped over the map. Usually the interviewer asks for information about the participants' experience of the land base or seascape over their entire lifetime. That is why it is referred to as a biography, although it might more correctly be thought of as an autobiography.

Most researchers focus on obtaining data pertaining only to the participant's direct personal activities and experiences. Others have found it useful also to ask for information about knowledge of sites obtained from parents and elders. If the interviewer covered enough topics and the participant had perfect memory and was willing to sit at the mapping table long enough, the resulting biography would represent everything that could be marked on a map. This of course never happens. What does emerge from the map biography is a useful but simple and incomplete representation of the participant's life story on the land and waters of the territory.

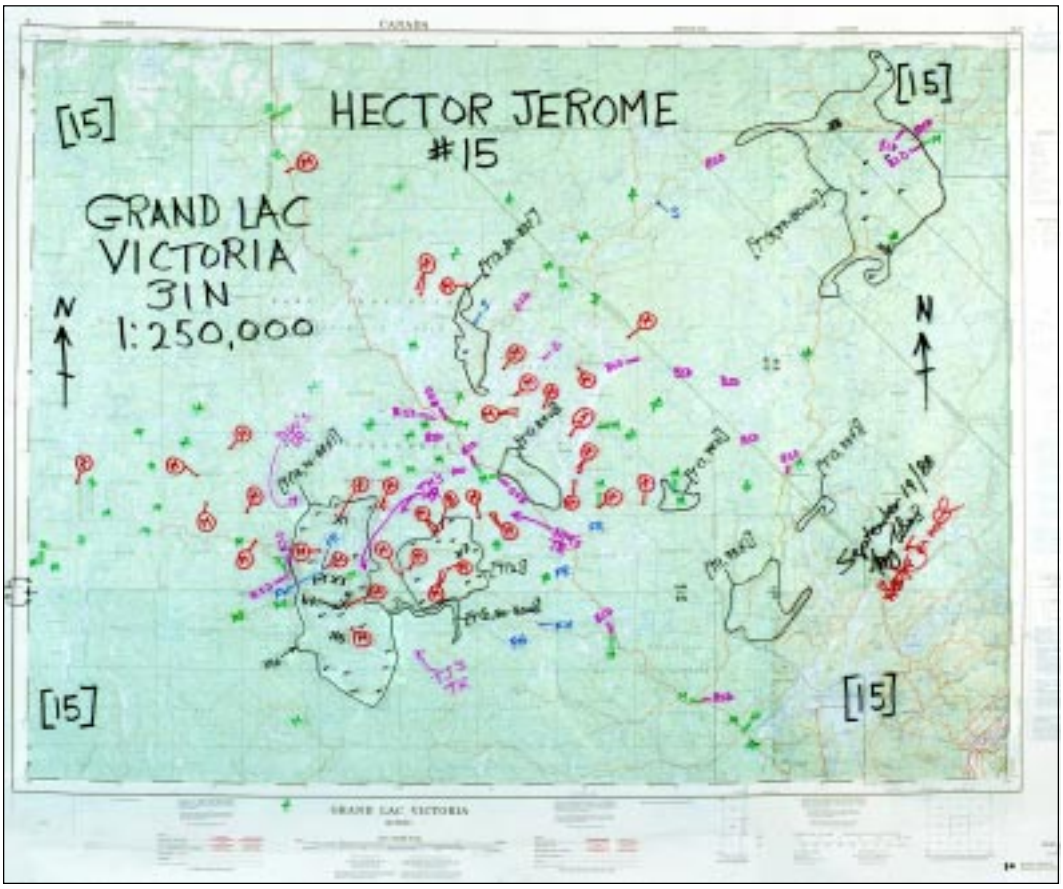


Some practitioners restrict their use of the map biography method to questions about harvesting activities like hunting, fishing, trapping, and gathering, and travelling to engage in those activities. Others extend the

map biography method to cover questions about the participant's experience and knowledge of ecology and critical wildlife habitat, traditional habitation sites, spiritual and sacred areas, legends and stories associated with sites, and aboriginal place names.

Hector Jerome prepares to do his map biography interview with the help of Scot Nickels and Sue Roark-Calnek.

In the photograph to the right, Hector Jerome is getting ready to do his map biography. He is a member of the Algonquins of Barriere Lake, near Rapid Lake, Quebec. The community did a number of different use and occupancy mapping projects. It needed the information for a co-management agreement aimed at ensuring that the Algonquins would always be able to pursue traditional activities on their territory. Map 1 shows the data that were marked on Hector's map biography during one of his interview sessions.



MAP 1

This is one of Hector Jerome's map biography overlays. The transparent overlay is taped to a mosaic of four National Topographic System paper base maps.

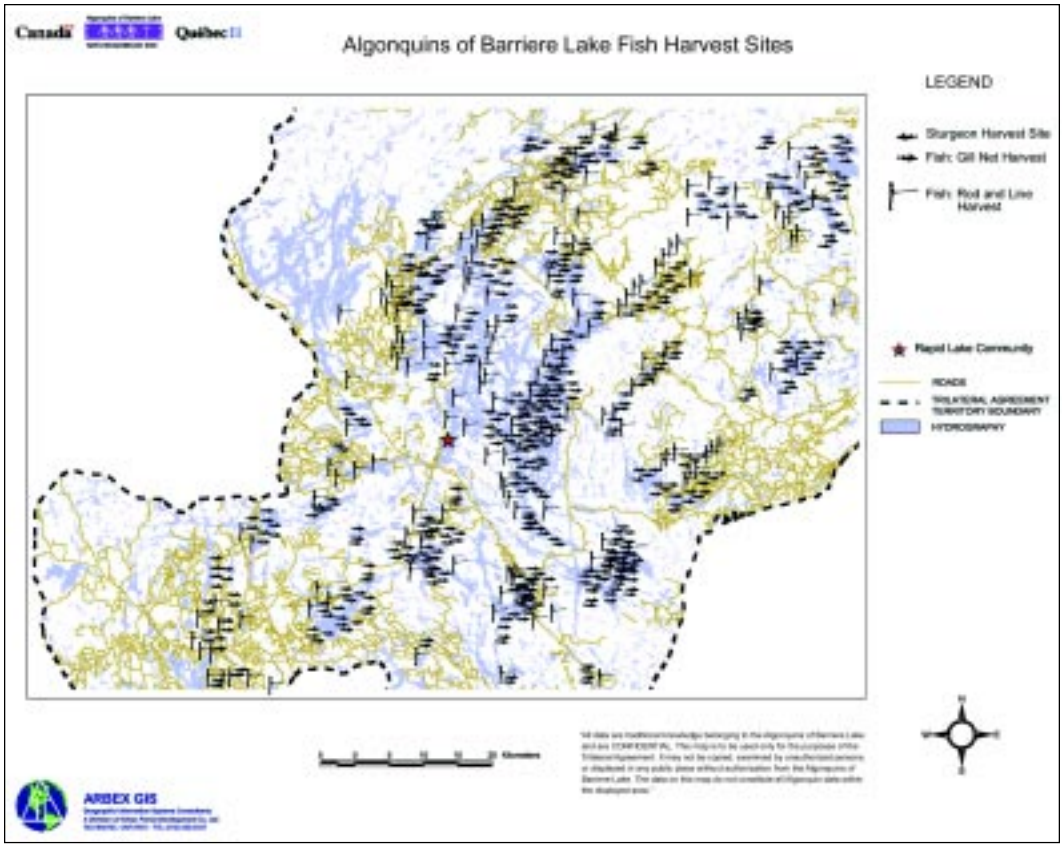
During that particular session, Hector was asked to indicate places where he had killed big game animals, small game, where he had caught fish, where he had done his trapping, gathered plant materials like berries, and the locations of cabins and camp sites he had used. In subsequent mapping sessions he recorded Algonquin place names and some of his main travel routes.

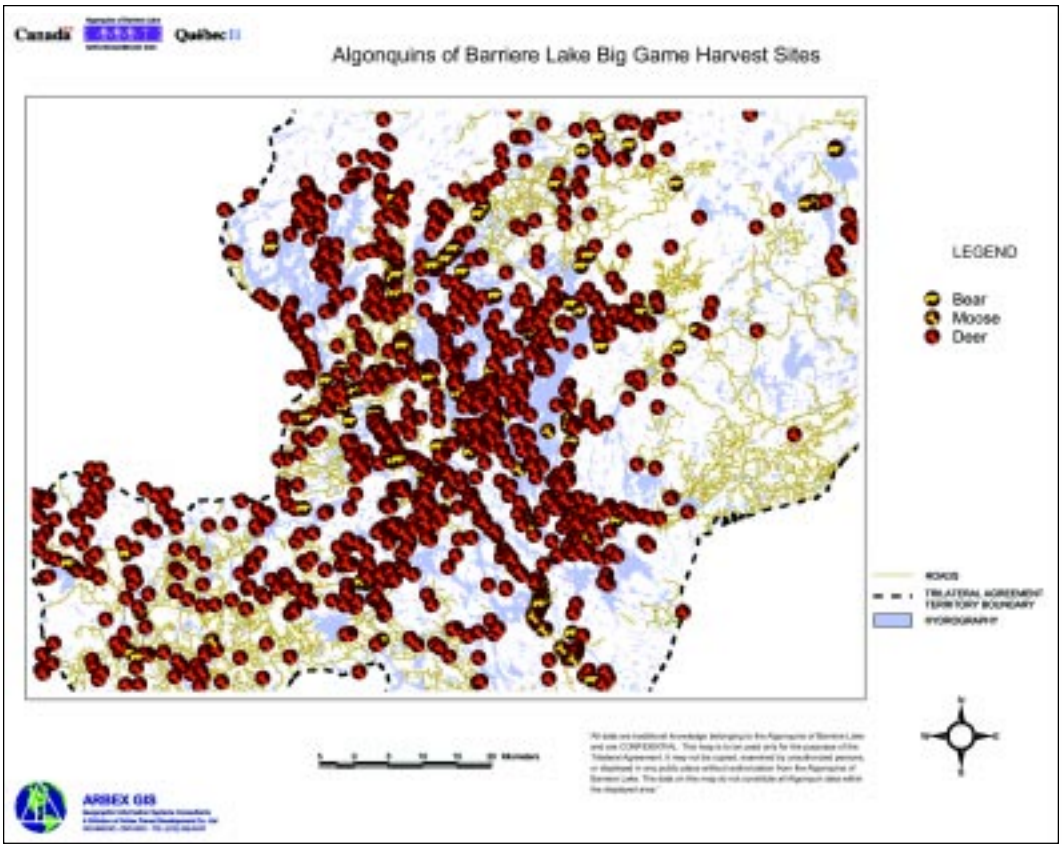
After some dozens or hundreds of map biographies are completed, the information from them is used to make a series of composite maps. These break out subsets of information provided in map biographies and combine them for all community members or for groups (teenagers, for example) in the community. The Algonquins of Barriere Lake project has produced the following seven map composites, which are preliminary and in draft form.

- Fish harvest sites
- Big game harvest sites
- Trapping areas
- Plant harvest sites, special wildlife sites, sacred areas
- Main travel routes
- Habitation sites
- Algonquin place names

MAP 2

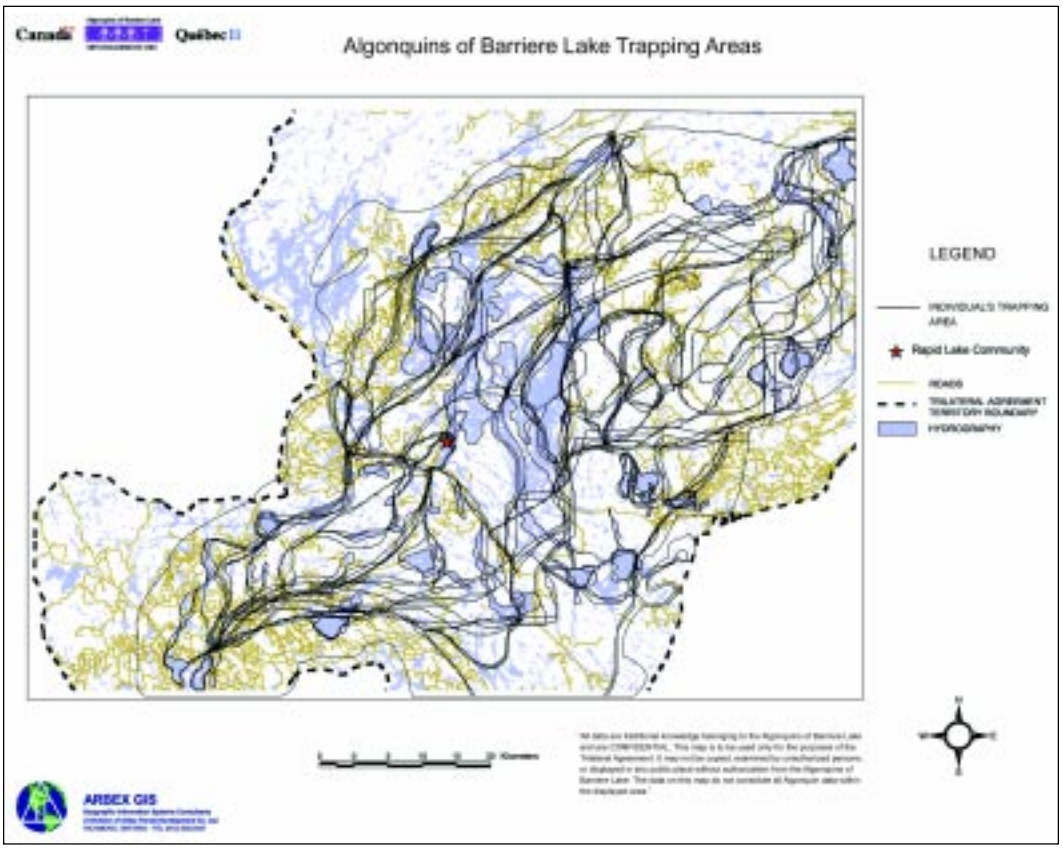
This composite shows some of the community's fish harvest sites. It displays a different symbol for each of sturgeon, fish caught in gill nets, and fish obtained by angling.





MAP 3

Some of the community's big game harvest sites are shown on this map. A different symbol is used for each of black bear, moose, and white-tailed deer.

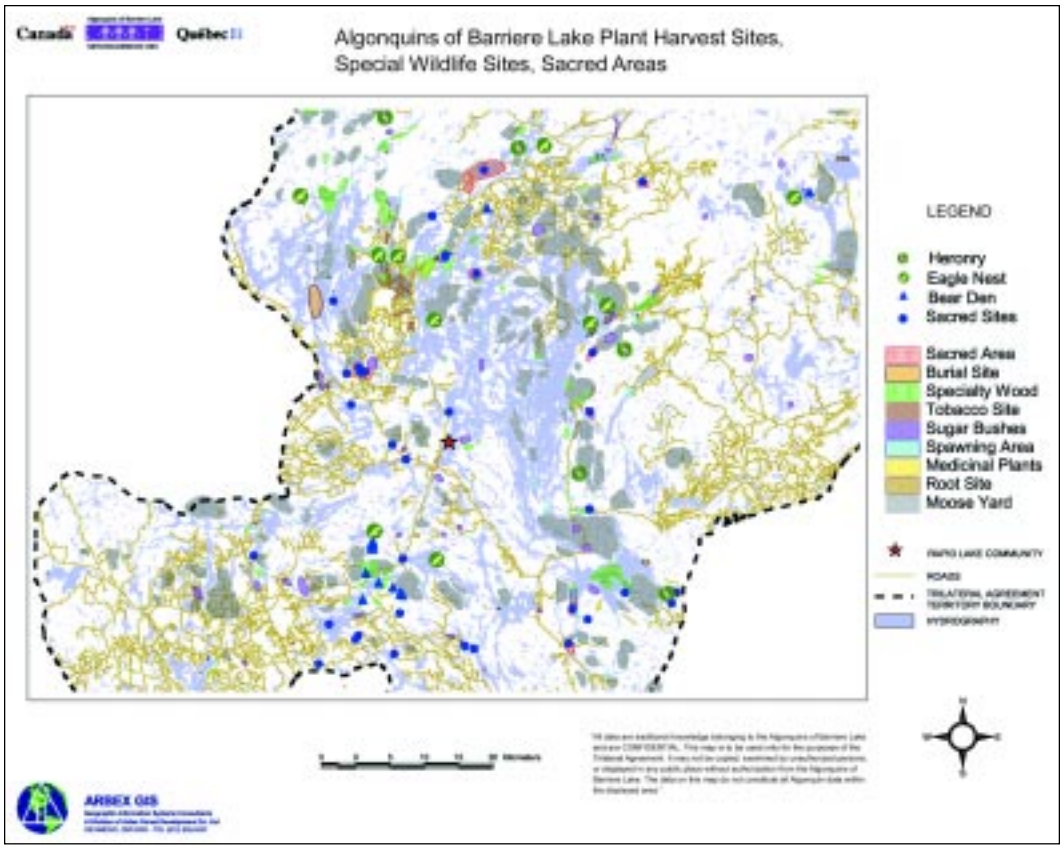


MAP 4

Each participant who had done any trapping indicated the areas trapped over their lifetime, and each of those areas is indicated on this composite as a polygon. The Algonquins call this their spaghetti map.

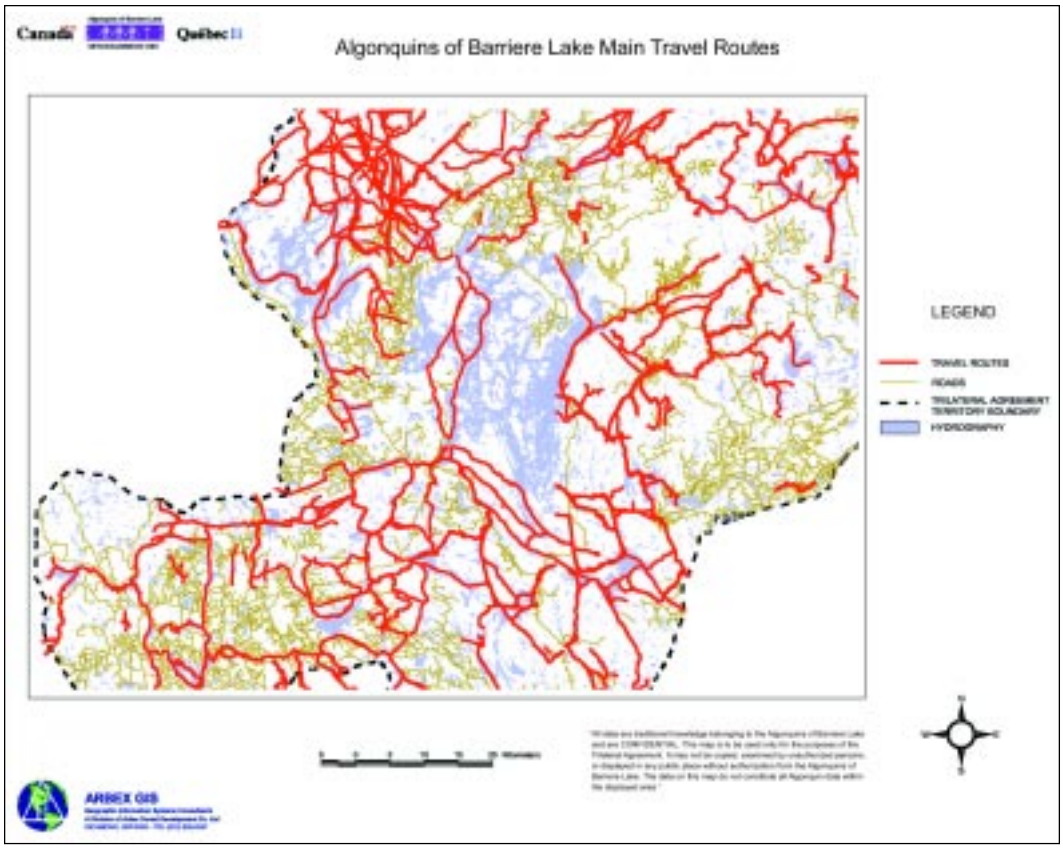
MAP 5

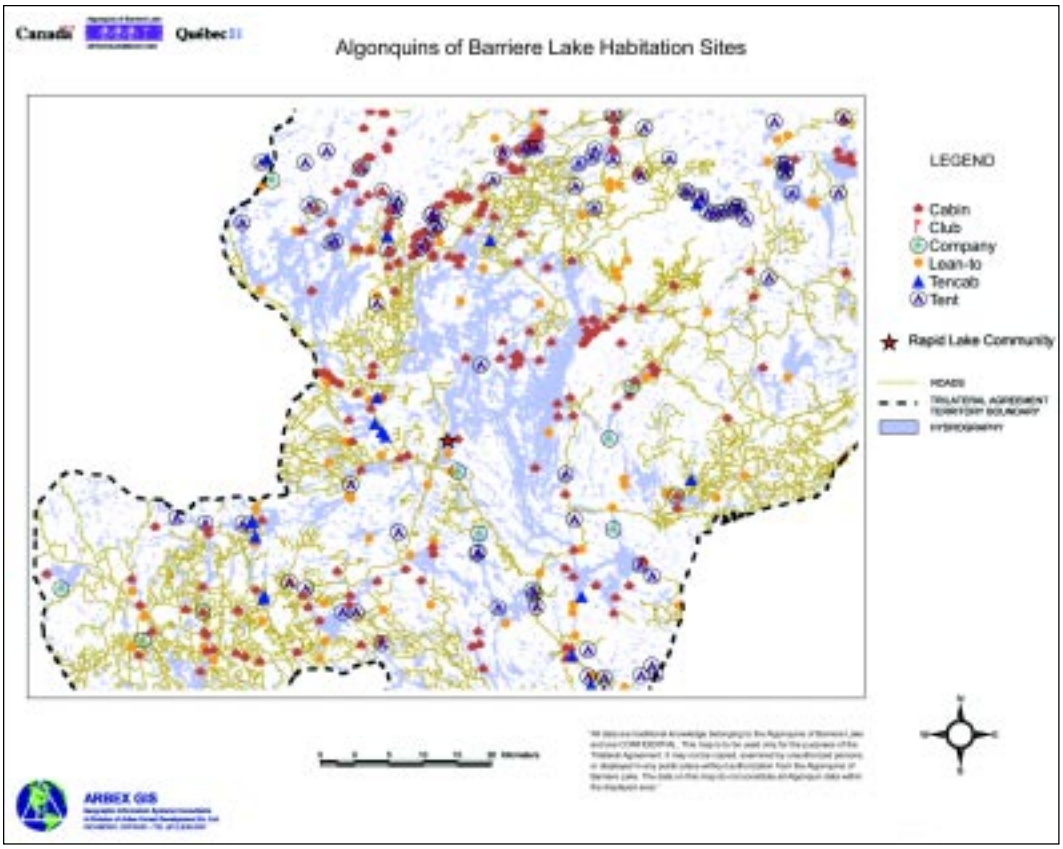
This composite shows some of the plant material harvest sites, special wildlife sites, and sacred areas. It displays a different symbol for each of the following: specialty wood, tobacco, sugar bush, medicine plant, root collecting, heronry, eagle nest, bear den, spawning site, winter moose use, sacred area, and burial site.



MAP 6

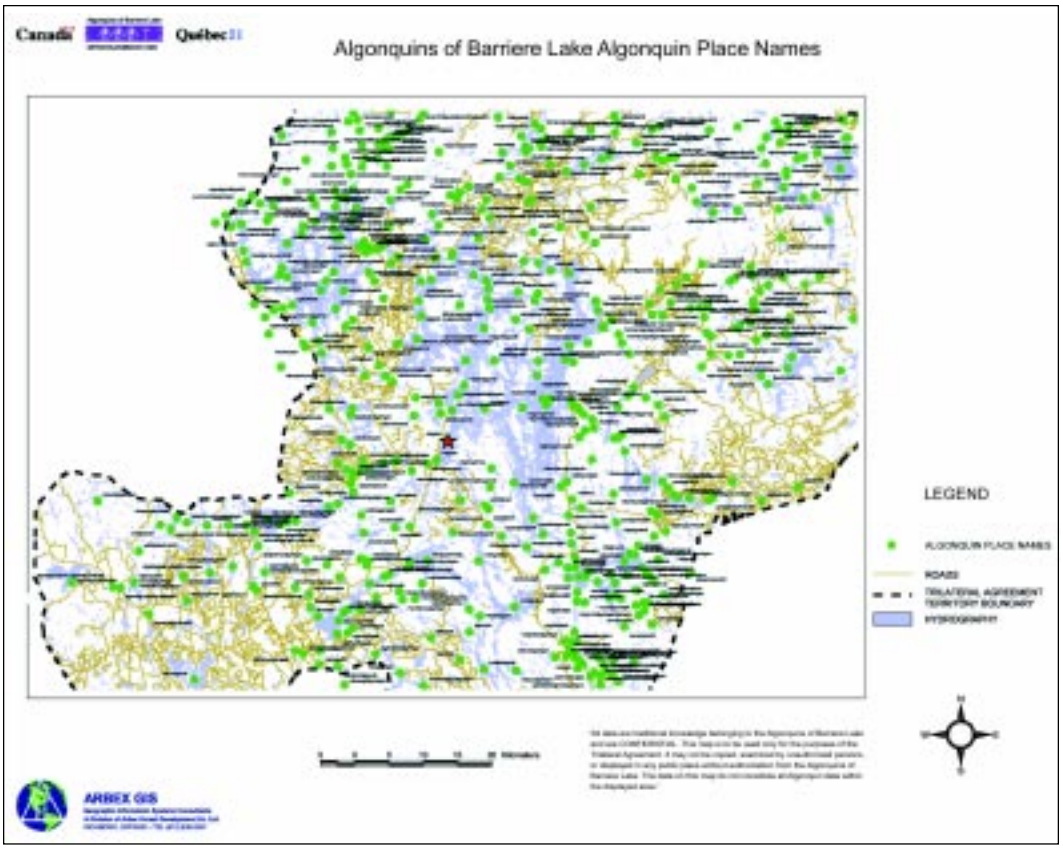
Some of the community's main travel routes are shown on this map.





MAP 7

This composite depicts some of the Algonquins' habitation sites. A different symbol is used for each of the following types of structures: trapper cabin, tourist camp, company building, lean-to, tent-cabin, and tent.



MAP 8

Approximately 900 Algonquin place names are displayed on this composite.

The categories for each composite change depending on what part of the country the mapping is being done for, which First Nation is doing it, and the intended uses of the maps. The Barriere Lake big game composite (Map 3) has three different symbols, one for each of moose, deer and black bear. In contrast, the Nahanni Butte Dene Band's big game composite might show symbols for each of moose, bighorn sheep, mountain goat, caribou, deer, black bear, and grizzly bear.

While the map biography is used for collecting an individual's use and occupancy information, the map composite is used for displaying or presenting the entire community's data. The biography is a data collection tool while the composites are what are used for presentation, education, negotiation, litigation, and so on.

4 Doing Quality Research

The history of Indian policy and the often adversarial nature of negotiations with government, industry, and sometimes with neighbouring aboriginal groups, suggests that the quality of mapped land use and occupancy data will remain a key factor in successful negotiations and litigation. Data quality may become even more important as populations grow, and as increasing numbers of corporations, agencies, and indigenous peoples lay claim to diminishing resources. This section of the guide addresses the issue of doing good research.

Most existing policies, guidelines and handbooks contain the seeds of failure.

Most existing policies, guidelines and handbooks instructing indigenous organizations how to map their cultural resources are flawed, and often contain the seeds of failure. Sometimes the authors of such material work within institutions whose goals are not entirely compatible with those of indigenous communities. Or sometimes the people who write the material are not skilled at doing the very thing they are instructing others to do. In some provincial and territorial jurisdictions for instance, archaeologists and foresters are given the responsibility of producing the how-to material. They cannot be expected to put together guidelines for doing successful social science research in First Nation communities.

There are different standards of quality that your research can meet. Project designers often give insufficient thought to the issue of quality, and their final maps end up being of limited use. In some instances, data quality is so poor that maps end up not being used at all for fear that if others

First Nations are always interested in mapping their current habitation sites, like this trapper's cabin made of logs, near Rapid Lake, Quebec, or the sod house shown below, in Mittimatalik (Pond Inlet) on Baffin Island, Nunavut.

got hold of them the information would be used against aboriginal interests. Sometimes having no data is better than having poor data, because poor data can be used against you. The standard depends on the intended use. For instance, the level of quality needed to use data internally for curriculum development is different than that needed to succeed in a court action. If you aim your sights high, then your maps are likely to withstand any level of critical examination.

There are four good reasons to set your sights high.

- Mapped cultural inventories can be useful in many different contexts, even unforeseeable ones. It makes sense to collect the data in a manner that allows your community to use the maps in any situation.
- Land use and occupancy information warrants respect, even a level of reverence. It deserves to be documented in a manner that minimizes the probability that it will be dismissed or disregarded.
- Many aboriginal communities are losing the elders who possess knowledge that the majority of their children and grandchildren do not. There is an urgency to document oral history and traditional knowledge for the benefit of future generations.
- Doing good quality land use and occupancy research is no more expensive than doing poor work, especially when you consider the long-term consequences.

Some communities that did cultural mapping a decade ago, when there was no immediate threat to their resource bases, are doing the research over again. They realize that the original work was not done carefully enough to counter the unwanted industrial development that is now taking place on their territories. When you think of the long-term benefits that can result from negotiations about who gets access to your territories, and the potential role of data in those negotiations, it makes sense to adopt a single, consistent approach to research. Simply, if you are going to do it, do it well.

There is an urgency to document oral history and traditional knowledge for the benefit of future generations.

Doing research well is not the same as making the results look professional. Quality has to do with the manner in which data are collected while appearances have to do with the manner in which data are presented. The GIS technicians, using their computers, can make almost any data set look impressive, but they cannot improve the quality of the data.

Some aboriginal administrations have made the mistake of letting technology lead or define their research agendas. A large number of communities now possess GIS hardware and software but not the capacity to operate it well. They have fine-looking maps that are great to hang in the local

band office or school. Unfortunately, many of these same maps would not get taken seriously in negotiations with provincial, territorial, federal, or other indigenous governments.

Looks do not win points at the negotiating table, substance does. Remember, "garbage in, garbage out." If the input is poor quality data, the output will be poor quality maps (Figure 3).

FIGURE 3 Garbage in, garbage out

The importance of having quality map data can hardly be overstated. If you take shortcuts and are sloppy with the design and implementation of your land use and occupancy data collection, do not count on getting to your desired destination.

Appreciating the Challenges of Oral History as Social Science

If you make the decision that you want to map the contents of oral tradition, and that you want to do it well, what is involved? Some things are obvious and others are not. A common problem is that an administration will assume its role is over once funding is obtained. This is a recipe for failure because the leaders are making the same mistake that the funding agencies often make. They underestimate what a potentially tough job the community's own data collectors have in front of them.

It is natural to underestimate the difficulties of land use and occupancy mapping. "We have been passing knowledge from generation to generation for thousands of years," your thinking might go. "What can be difficult about mapping aspects of that oral tradition?" The answer emerges when you consider the kinds of political processes in which your data can be used, and the basic assumptions on which those processes are built. Negotiation, mediation, and litigation are all based on an examination of the merits of concrete documentary evidence, part of the tradition of Western science.

Land use and occupancy mapping employs the rules of social science, which studies society and social relationships. The practice of it is social

Some of the structures that people stay in while at habitation sites are less permanent than log cabins or sod houses. Canvas tents are used at this bush camp near Pinehouse, Saskatchewan. Regardless of the permanency of the structure, all sites where people stay out on the land while hunting, fishing, trapping, gathering and travelling are significant, and usually appear on First Nations' maps.

in nature because one person is asking another for information, and it is science because the questions are being asked in a systematic manner, according to Western scientific rules of gathering and verifying knowledge.

Looks do not win points at the negotiating table, substance does.

People are complex animals and all kinds of psychological and social considerations are involved when you ask someone else for information. This is especially true when the kinds of questions you ask are personal, as in the case of use and occupancy mapping. The challenge is magnified because the research crosses cultures, with the indigenous community adopting rules of research developed by the larger society. One culture has been fundamentally oral in nature for a very long time, while the other has depended on the written record for the transmission of information.

Oral traditions must now be respected and taken much more seriously than before, thanks to Gitxsan and Wet'suwet'en elders, and the Supreme Court of Canada's 1997 *Delgamuukw* ruling. *Delgamuukw* says that evidence based on oral traditions must receive the same weight as other common law forms of evidence, such as archival documents and expert opinion. The court's finding is a victory for all aboriginal governments, but it does not mean that such testimony will receive immediate respect. As new rules of admissibility and weighting emerge in the courts, they are likely to be consistent with the principles of the existing scientific model.

Land use and occupancy mapping studies sometimes document places where wild foods are prepared for consumption and storage. These places are usually but not always located at habitation sites. Elder Helen Natomagan of Pinehouse hangs strips of moose meat on a rack, beneath which a fire will be made to provide smoke for curing the meat.

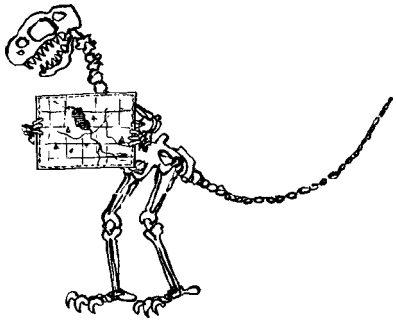
The role of social science will not be diminished, either in courts or outside of them, for years to come. However, once your leadership commits itself to doing good research, and is aware of the limitations of any mapping project, it has made a significant step towards levelling the playing field. Western science, and all its strengths, can be a powerful tool in the hands of First Nation governments.

Avoiding the Museum Approach to Mapping

The first thing that has to be in place is your leadership's commitment to producing a set of good quality maps. This commitment usually goes hand in hand with a plan that is larger than the particular mapping project. There needs to be a more general strategy. For what political processes or framework agreements do you anticipate using the maps? How do you design the work to be effective in those contexts, while keeping your next move in mind? How do you minimize the ability of others to use your own research against your interests?

It is risky to view a use and occupancy project in isolation from a larger research strategy. No matter how thorough data collection is, the typical budget cannot produce maps that represent all your community's cultural geography. Even if you had funds to do four major mapping projects –

harvesting sites, travel routes and habitation, spiritual sites, and place names – and you documented all the mappable information that all your elders and harvesters had, the final product would not represent the totality of your culture and oral tradition. The final set of maps would still have gaps, with many cultural features isolated from the others in a sea of blank space. That blank space, however, can be critical to the survival of the culture. For instance, the final maps might display the places a community harvests salmon while the spawning streams on the community's territory remain unmapped, or blank.



The danger of showing cultural features as disconnected islands, or fragments, on a map is that corporations and agencies carry on with business as usual on the portions for which no data are mapped. Governments may take the position that aboriginal title and rights are site specific, and do not apply on the rest of the territory. They tend to regard the mapped bits as museum pieces which are isolated remnants of heritage, instead of parts of living cultural systems. The sad fact is that you can save all the island remnants and, in the end, save little. The development that occurs in all that blank space, much of which is productive habitat for the animals and plants necessary to sustain your culture, can lead to a situation where your mapped features eventually do become museum curiosities that do little more than commemorate dead tradition. Perhaps the salmon harvest sites get some protection in planning processes, but the watersheds that feed the streams continue to get clear-cut, resulting in the destruction of the spawning beds. Saving some of the pieces, some of the sites, is not the same as keeping the system healthy.

Saving some of the pieces, some of the sites, is not the same as keeping the system healthy.

There is risk involved in mapping specific sites, but it is necessary if you are to end up with credible maps that serve your community well. The issue is not so much whether to map detailed and specific sites when appropriate, but rather how to control the release of data, how much data to release, to whom, when, and at what level of detail – both in terms of geographical space and historical significance. Collecting data that are best represented as small areas or points and mapping them as large polygons defeats many of the purposes for which First Nation groups do the mapping in the first place.

Regardless of whether specific sites are mapped as points or large polygons, in many parts of Canada it would be impossible to show that entire traditional territories are saturated with use. That is why it is important to link each piece of use and occupancy mapping research to your previous efforts, and to have your next project build on the strengths of what you are doing currently. Ideally you will end up with something called

Habitation sites are particularly important to map, not only because they are concrete evidence of occupancy, but also because once you document them, it is much easier to then map your community's travel routes. This is because when people are travelling, they are usually going from one cabin or camp to another, or making day trips out from the sites to harvest resources. The habitation sites are like the dots on a child's connect-the-numbers line drawing.

comprehensive research. To date this has been a rare thing, mostly because indigenous leaders have not seen a need for it. Or if they have, they have not been presented with any examples of how to accomplish it.

Comprehensive research requires an overall plan that links a number of key components together. Taken as a whole, it proves that the museum approach is not valid. Many nations have used something called a harvest survey to obtain quantitative measures of the amount of food their territories provide. Many have researched and mapped the ways that industry, government, and third party interests have restricted their use of their territories. Comprehensive research also describes the complex system of use that is the foundation of all the mapped use and occupancy data. That system of use cannot be portrayed in map form, but it can be put into words. Traditional ecological knowledge, social customs, organizational structures, and social institutions are part of the system, and when the maps are considered in light of these, there are no blank spaces. Everything can be shown to be interconnected. What appear as blank spaces on the map can be shown to have meaning and significance to the culture.

A number of communities are successfully pursuing comprehensive research. They and others are rightly concerned about the damage that can be done to their resources and territories in the time it takes to do research. However, numerous groups have discovered that even incomplete (but good quality) research has been effective in stopping or lessening the impacts of unwanted development. Indigenous governments are including the negotiation of interim measures in their long-term strategies. These are temporary mechanisms that give all cultural resources, whether mapped or not, some level of protection until such time as a satisfactory management plan is in place. Such a plan is one that gives due consideration to the nation's entire system of cultural resources, including the unmapped "empty" areas.

Whether or not interim measures are in place, all maps should display prominent qualifiers that state their limitations, and put potential users on notice that the data are not to be abused. Such qualifiers might indicate that the map is a work in progress and incomplete, and that the data displayed in no way lessen anybody's obligation to consult with the community. Restrictions concerning ownership, viewing, replication, and distribution of the map should also appear.

Indigenous peoples do not have the luxury of doing land use and occupancy research for the fun of it. Communities want their work to meet concrete practical needs.

Indigenous peoples do not have the luxury of doing land use and occupancy research for the fun of it. This is applied research, not academic inquiry. Communities want their work to meet concrete practical needs. Because those needs often involve long-term change, it is necessary to

have a research plan that is in step with a long-term political agenda. Your mapping has to be designed with your big picture in mind. If it is not, somebody has already designed it for you, as part of their agenda, which almost always involves the museum approach.

Laying the Groundwork for Good Research

The most important factor that makes or breaks community research is whether members are willing to participate. An administration can have a big picture well thought out, and truly want a project to succeed, but still fail because it does not secure community support. It is the administration's responsibility to do whatever is necessary to inform people about the project, address concerns about things like confidentiality, and develop a consensus that the project is in the best interests of all families. Ideally, this is done before the first map session takes place.

Here are two real-life examples that represent the range of community preparedness for mapping. The two communities, one in Quebec and one in Ontario, are very close in population size and have territories that are similar in extent. Data collection involved the same number of interviewers, asked for the same kinds of information, used similar interview guides, required the same amount of participants' time, and recorded data at the same scale of base map. In both cases, close to 90 participants did map biographies. Data collection took three weeks in Community A. It took three years in Community B. The band administration and elders of Community A spent many months publicly discussing the research, and a strong consensus about the need for it was solidly in place before the first interview. The chief and council of Community B endorsed the research from the outset, but the elders were split on the issue and many adults had no understanding about it when data collection started. Obtaining a set of map biographies required a dozen trips to the village at considerable expense, and the research agenda itself became a divisive issue.

The most important factor that makes or breaks community research is whether members are willing to participate.

If community consensus is not in place when interviewing commences, workers will struggle for the entire data collection phase. They will find themselves spending far too much time explaining the project to people, and listening to individuals' concerns about the research itself, the funding agency, or even gripes about their own politicians. It is not the interviewer's job to do damage control when sensitive issues are raised during data collection. Every local government has its critics who will use a request to participate as an invitation to criticize. For many data collectors, getting individuals to sit down with them has been quite frustrating in itself, and the experience of having prearranged map sessions turn into no-shows

is all too familiar. It is neither fair to the interviewers nor productive for the research to start without widespread popular support.

In addition to building consensus for the endeavour, the aboriginal government must provide hands-on political and material support to its data collectors for the entire period of interviewing. Administration personnel are usually stretched thin because of limited resources. Often, everybody ends up being asked to take on more than they can handle. Unfortunately, the success of the research can be jeopardized if the interviewers get asked to take on too many responsibilities. Ideally, the community's leaders will be able to designate a staff member who has the skills and time to help take care of the problems that workers will face from time to time. More technical problems are best handled by the research director.

Contemporary travel routes are often mapped, regardless of time of year used and method of travel. A Pinehouse resident on a snowmobile cautiously inspects an ice fissure on Sandfly Lake in northern Saskatchewan (above). Two members of the Algonquins of Barriere Lake paddle along the Ottawa River, near its headwaters in mid-northern Quebec (below).

Research Personnel and Training

Leaders sometimes make the mistake of always hiring local research directors regardless of the candidates' previous experience or training. If you are counting on high-quality data to use in contexts where the allocation of natural resources is at stake, then this can be a recipe for disappointment. Indigenous politicians must be clear about whether their primary goal is to reap the short-term rewards of hiring local research directors (things like local political support and income for the community) or to seize the opportunity to produce maps that can help win long-term benefits.

This is not always an either-or situation. There are some very skilled aboriginal researchers, but many communities cannot yet count these among their members. It will be some time before the majority of indigenous groups have their own capacity to design successful cultural research of this kind. Indigenous governments can create a temporary solution during the transition period by negotiating funding for pre-project training of potential community research directors, or at least, on-the-job training experience.

Most communities will, for the time being, remain dependent on the services of skilled outsiders to help them design and direct land use and occupancy research. Unlike the 1970s, when isolated groups first started doing this kind of mapping, almost all communities have now had experience with outside consultants and researchers. Most are aware of the importance of keeping consultants accountable, and of maintaining control of cultural data. Still, administrations sometimes make poor judgments about the abilities of consultants to help them do good mapping.

Often it is assumed that if a candidate for research director is a university graduate, she or he will meet your needs. University experience is a

valuable asset, but it does not in itself point to successful research. The candidate's academic background is likely to be in a field such as forestry or archaeology which accepts the world view of society at large. If his or her assumptions about the connection between your people's culture and well-being are at odds with your own people's way of looking at the world, then there is a problem. The risk is that the research will be undertaken largely in keeping with outside values despite the person's best intentions. The research would then likely end up serving outside interests. The ideal qualification for research director is a demonstrated track record of having worked with First Nation people on cultural research projects, of having earned their trust, and having produced useful product.

Sometimes the mapping of travel and trade routes focuses on documenting the most ancient of a First Nation's heritage routes. Genevieve, Bazile, Lucie and Antoine Decoursay pause for a rest, while paddling on Barriere Lake. The lake is known to have been used by the Decoursay ancestors for many hundreds of years.

In addition to the research director, the selection of community people to do data collection is critical. These individuals have to be motivated by the belief that the project will make a difference to their people. They need to be self-starters and firmly committed to staying on for the duration of the data collection phase. This is especially important, because in most communities the team of interviewers is made up of only two or three persons, and the loss of even one makes a difference in the amount of map sessions that get completed. Most projects do not have the budget or flexibility to allow for the training of a replacement.

The level of commitment and motivation is as important as any other qualification. The tone in this regard will often be set by the community's leadership. If the project is perceived to be a make-work program, the likelihood increases that workers will be hired who regard the position as just a job. There are numerous other considerations in selecting workers. They should have the following qualities.

- Good interpersonal skills.
- The respect of community members, especially elders.
- A heartfelt interest in their culture.
- A familiarity with their traditional culture, systems of harvesting, and traditional territory.
- A lifestyle that allows them to show up on the job consistently free of any influence of drugs or alcohol.
- The ability to read and understand maps.
- The ability to speak and write in their indigenous language.
- The ability to use a flexible interview guide by being able to think on their feet and probe with follow-up questions.
- A willingness to pay close attention to detail.
- The ability to read and write well, and to keep good research records.

The good news is that this is not rocket science.

You will not often find people who meet every one of these criteria. It is important to select your team so that individual strengths complement each other. For instance, successful interview teams sometimes have only one member who speaks the indigenous language and has an intimate knowledge of the territory, and another member who writes well enough to keep good records and take responsiblity for the detail required by social science.

Most government-funded research projects encourage workers to start data collection without sufficient training. Agencies either set low standards, or do not provide the means by which higher ones can be achieved. It is up to the community to insist on high standards, to define those for itself, and to collect data in a manner that meets them. You can do good use and occupancy mapping only if you know the rules of good data collection, and for this reason training is a prerequisite for success in most communities. The good news is that this is not rocket science. The principles, methodologies, and confidence needed can be acquired by people with nonprofessional backgrounds in a matter of days.

Carrie Paquette, Fred Askoty, Chief Stewart Cameron, Sam Acko, Stan Napolean, and Lana Garbitt practise techniques thay have been acquiring during a land use and occupancy research skills training in Fort St. John, British Columbia. The workshop brought together community researchers from the Doig River, Saulteau, and Prophet River First Nations.

Taking Control of Research Design and Data

In addition to building up community-wide support for the research, and the careful hiring and training of staff, your administration must take control of its design. The design is a combined blueprint and work plan. It lays out how the data are to be collected and then worked into a final set of maps.

Research design does not happen by itself. If you have not created it, then you need to ask yourself who has. If you are not in the driver's seat, then somebody else is, and that somebody is usually the funding agency or industry. Often what you want your map data to accomplish is at odds with what the funding body wants to accomplish. For instance, your community might want cultural sites mapped so that it can protect them, while the funding agency might want the sites mapped so it can honour some administrative or legal obligation, and then proceed with business as usual on your territory, with no regard for protection.

If you are not in the driver's seat, then somebody else is.

No single research design can meet the needs of conflicting or contradictory agendas. You can, however, put together a blueprint that serves aboriginal interests well, while meeting funding requirements. You can also minimize the risk of government misusing the information you might be obliged to deliver. This is an especially sensitive issue because there have been numerous instances where cultural information has been collected by consultants or academics, then used for personal gain, and sometimes never returned even after repeated requests by the community.

Maintaining control of your map data is essential. It can be done, even in the face of funding requirements to provide some of the data to outsiders. A number of projects have been successful in meeting obligations to supply information, by providing data that are presented in a way that safeguards sensitive sites from violation. For instance, there might be a category of sites that is especially vulnerable to vandalism, such as ancestral burial grounds. The map could show each site as an area covering ten square kilometres, making them impossible to find on the ground without the community's assistance.

Information-sharing agreements can be negotiated to include a variety of mechanisms that allow the indigenous group to retain sole possession of the kinds of data most likely to be abused. Under some arrangements, the community releases data on a case-by-case basis as the need arises, and only after careful evaluation by a committee of elders and other leaders. Under other arrangements, the government receives only maps showing cultural sites, while the aboriginal group retains control of the database, which contains the detailed information about the history and significance of each site.

Taking control of your mapping project involves more than the obvious things such as negotiating a strong information-sharing agreement and keeping consultants accountable. It also means giving careful thought to the technical design of the research. Funding arrangements often include prepackaged research designs, in the form of policy guidelines or "how-to" manuals, and these usually have big problems. Fortunately, funding guidelines always leave a lot of room to manoeuvre. But if you do not take advantage of this flexibility and design the research yourself, somebody else is already in the driver's seat by default.

Prepackaged research designs, in the form of policy guidelines or "how-to" manuals usually have big problems.

Avoiding Response Burden

Taking control of your research involves avoiding the unintended invitations to fail that are hidden in the instructional material provided by government and industry. The most common invitation is simply that the community is asked to take on an overly-ambitious project, one for which the expectations set by the research design are too high. This appears innocent enough, which makes it difficult to recognize as a potential problem. Attempting to accomplish too much is probably the number one reason for research shortcomings, and why map projects fail to produce the results that are wanted by aboriginal administrations.

When you design research you have to be realistic about what can be done within a set budget and time frame. Your expectations have to take into account the skill levels of project personnel and the level of cooperation you can expect from potential participants.

Suppose you want to design a project to map the content of oral tradition. You could collect some of the following kinds of information: harvesting sites; ecology and critical animal habitat; site-specific features of special cultural significance; travel and trade routes; and place names. All of these kinds of information, or themes, are mappable. However, it is impossible to collect the data needed to map them all in a single project, which is exactly what some guidelines encourage communities to do. A really good job can be done only when the focus is on one or two of the themes. It is necessary to be selective in what you are going to ask people because if you are not, you end up with an interview guide that is complex and long, which means you run the risk of major response burden.

Response burden occurs when the participant experiences the interview as too much of an effort. People have a range of experiences at map sessions. Some will find them enjoyable and even fun; others will find them positive, but somewhat inconvenient. Still others will experience their interview as frustrating. The interview must be structured in such a way that the majority of participants will be satisfied afterwards, especially the elders. Those are the people who likely know the most about many kinds of cultural features. They also tend to experience the most fatigue and frustration when response burden is high. Elders also tend to be listened to by community members at large, and their opinions about the interview have considerable impact on final participation rates. What you want is for the mapping to generate project support by having participants go back into the community and tell others what a worthwhile endeavour it is. You do not want people leaving the session annoyed.

Two things happen when response burden is high.

- The interview gets a reputation for being tough. When this happens the data collectors spend much more of their time trying to get people to participate, and the final number of completed sessions is low.
- People who do agree to do a map are more likely not to provide good quality data for each of the questions.

Both of these outcomes translate into a weak set of community composites.

One way to look at response burden is as an issue of respect. You want your workers to respect the basic limitations we all have as human beings. The participant does not have an unlimited amount of energy, time, or willingness to concentrate on the task at hand. On average, it seems that most people are comfortable staying focused up to about one and a half hours at a sitting, although this varies from one culture to another, and it certainly varies from one individual to another.

Respecting the Limitations of Community Workers

Encouraging First Nation people to design research that results in excessive response burden is only one way in which instructional material invites failure. Another is to set up wildly unrealistic expectations of your workers. Consider this scenario. The community gets the funding to do a mapping project. The administrator has a budget to hire four workers and a research director for 15 months. The government supplies guidelines which lay out the project's phases and how each is to be conducted, as well as what the community is expected to provide at the end of each phase. It sounds good so far, but the problem is the job description of the workers.

A typical mapping project involves a number of big tasks, as shown in Figure 2 (page 10). Some research guidelines also require the project, as part of the same 15-month package, to do other tasks like archival work, ground-truthing of sites, and the manual completion of a data form for each mapped feature. What ends up happening on some projects is that community people are asked to do a whole range of tasks, any one of which by itself is a substantial undertaking. Most individuals selected as workers for these kinds of projects do not have professional experience or a lot of training in related fields. You put your research at serious risk if you ask your interviewers to wear too many hats. All of us have limits on how much knowledge or how many skills we can learn and apply in a given amount of time. It is unreasonable to ask an inexperienced person to become skilled enough to do, for instance, archival research, social science data collection, transcription, administration (filling out data forms), and digitization of data all in the same period.

You put your research at serious risk if you ask your interviewers to wear too many hats.

Logs are an important construction material for many First Nation communities. Land use and occupancy mapping projects often document the locations where trees are harvested for this purpose, as well as the actual building (habitation) sites.

This would be fine if both the community and funding agency had set out with the intention of providing workers with a smorgasbord opportunity to taste a whole series of research skills over a period of a few months, but that is never the case. Funds are provided to produce concrete product, which is the primary objective. Capacity-building is secondary. The administration typically does this kind of research because it needs data for specific purposes, often urgently. Workers who are asked to learn, master, and apply a variety of skills in a short time frame, and produce something of quality, might come to feel they are in a pressure-cooker. Under these circumstances, anybody would have difficulty delivering.

One of the saddest consequences of research guidelines that invite people to take on too much too quickly, is that the project ends up leaving the workers overwhelmed, even demoralized. For instance, in one community, in less than a year, the project staff, all of whom were from the community, were asked to undertake intensive training in archival research, map data collection, and transcription, as well as workshops in GIS. The project ended in disarray, without funds and without quality product. The band hired

one of the luckless workers to stay on to manually create the composites that were originally intended to be produced using GIS software.

What are the probable results of a situation like this? Aboriginal leaders, negotiators, educators, lawyers, and resource managers do not end up with the quality data needed to serve their people. The community acquires a reputation for failure and finds itself out of luck the next time it applies for funding to do cultural research. Community members become cynical about research because their efforts did not translate into concrete benefits. The workers are left doubting their ability to acquire and apply research skills, and perhaps thinking the project's outcome was their fault.

Every research project is an opportunity to build the skills and confidence that are one of the cornerstones of self-government.

These are serious consequences, especially if your people's vision is to govern itself and develop the capacity to do its own research, planning, and resource management. Every research project is an opportunity to build the skills and confidence that are one of the cornerstones of self-government. This can only happen if the expectations put on your researchers are realistic. Make sure their job descriptions are reasonable and focussed enough to ensure success.

Aboriginal people embarking on land use and occupancy projects need to get themselves in the driver's seat of research design. Being cautious with the how-to instructional material that often comes with funding dollars, and creative in modifying it to suit your needs, is part of the process. There is always room to manoeuvre. You can mold the research design so that it respects both the limitations of your participants and those of your workers, minimizing response burden and creating a process in which your workers succeed.

5

Designing the Project: Why, Who, When, Where and What

There are hundreds of decisions that relate to the design of a land use and occupancy mapping project. Most have to do with nit-picking details. What symbol should I use for the map category of moose? Should 15-year-old males be asked to do map sessions? How do I assign personal identity numbers to participants? How do I indicate the date on audiocassette labels? Should a site be mapped based on a childhood recollection or parental account of it? How do I correct a mistake made when marking data? Do I ask a question about snowshoe hare? Should I map the place a person killed caribou the time he was visiting a relative on another group's territory?

So, where to start?

Fortunately, there are a small number of key decisions that have to be made that help clarify everything else that follows. These have to do with the project's five big defining characteristics, or parameters. They look simple at first glance. They are the why, who, when, where, and what of the research. Many map projects do not think these through carefully enough, leading to problems and unnecessary damage control efforts later on. More than that, not giving due consideration to the defining characteristics can seriously sabotage the quality of your maps. The Big Five are at the heart of research design.

1 Why
2 Who
3 When
4 Where
5 What

The process of defining the five research characteristics may take a considerable amount of time, if done well. Ideally, the brainstorming involves the input of the community's political leadership, administration, project staff, active harvesters, and elders.

1 Why

Why are you doing this project?

All five questions are important, but the most critical one is why. Why are you doing this project? What do you want to accomplish with it? What are your objectives? Are you going to use the land use and occupancy maps for curriculum development, co-management negotiations, impact mitigation, negotiation or litigation of rights and title, compensation, or some other purpose? The list could go on for a long time. For instance, you could design an oral history mapping project that focuses entirely on salmon management, or on the rehabilitation of medicine sites, or on traditional travel routes with an eye to developing ecotourism on your territory.

Peter Paul of the Afton First Nation in Nova Scotia strips a piece of birch bark for making a quill basket. Many kinds of trees provide materials for many purposes. Wood from the white birch for instance, is used for firewood, and the bark has been widely used by some indigenous cultures for making things like canoes, eating utensils, baskets, art and tools. The locations of the harvest sites are often mapped.

Be careful. The temptation is to list many purposes and then to design a process to achieve them all. This cannot be done, at least not done well. What you end up with is a mishmash of poor quality data that will not meet the requirements of many of your listed purposes, and that will not do the job well for any of them. It is fine to have multiple objectives in mind as long as you have clearly identified one as being primary. That single objective then becomes the focus of the entire project, the reference point around which all other design considerations revolve, including the other four parameters.

2 Who

Who are you going to interview?

Depending on the primary objective and how much time and budget are available, you have to make decisions about how many and which people you are going to interview. In other words, you have to define your study population.

It is often useful to start by breaking down the band or membership list into smaller lists of males and females, by 10-year age groups; for example, men from 30 to 39 years of age, women between 30 and 39, men from 40 to 49, and so on. Rank each of the smaller lists, so that the most experienced and knowledgeable persons in each group are identified, and indicate which elders are at risk because of health reasons. Mark which people are no longer living in the community, and where they currently reside.

Perhaps knowledgeable individuals who are not on the membership list but who are married into the community should be added to the lists. Maybe there are official members who have not set foot on the territory for many years, and should be taken off the lists. Each community is unique, but these are the kinds of considerations that lead to a set of criteria, or rules, that determine the study population. The point is to think it through and have the population defined before starting data collection.

It is impossible to know exactly how many interviews are needed, but it is important to have some idea about the minimum number of sessions required to meet your main objective. Although a large sample is always desirable, it is not always necessary. For instance, under the federal land claims process an aboriginal group would want a line depicting their outer territorial extent of occupancy. This can often be acquired by interviewing a couple of dozen of the older and most wide-ranging resource users. The claimants' survey can be successful with participation of a quarter of their adult population, or even less. However, if the primary objective was to obtain baseline data for purposes of resource management, a much larger sample size would likely be needed. Interviewing a relatively small group of elders who travelled widely over the territory a few decades ago might not yield data useful for making decisions about where younger people harvest resources today.

Like many elders, Aloysius Benoit of the Miawpukek First Nation, a long-time trapper and sailing schooner captain, possesses an encyclopaedic knowledge of his community's traditional territory, which includes the area around Conne River, Newfoundland. During his map biography session Aloysius provided firsthand accounts of sites that he had visited more than 60 years prior to the date of his interview. Whenever a "within living memory" use and occupancy study is undertaken, elders are the lynchpin sources of data.

3 When

When is the period of time for which you want to collect data?

This depends, as do all the parameters, on the purpose of the research. Generally, there are two relevant time frames. One is called recent or "current" use and occupancy. The accepted definition for this is "within living memory" – any time within the person's life. Some researchers regard this as the period from the person's teenage years until the date of interview. Others prefer to include childhood recollections as well. A set of current use maps represents the sum of the direct personal experiences of all participants. It can display some information for up to 75 or 80 years prior to the time of survey, but most of the information is more recent because most participants are younger.

The second time frame pertains to historical use and occupancy research, which involves a greater time depth. It results in data that extend farther back than those obtained strictly from within living memory sources. Historical use research uses a combination of oral history and written sources, and documents a community's occupancy of a territory going back hundreds of years.

Historical use and occupancy studies use sources that go deeper than the direct life experiences of current generations to help determine the limits of the traditional territory, often for land claims purposes. Current research is usually undertaken to determine the extent and limits of a community's use of territory within recent years. This is important for claims research and, when data are obtained for the whole territory and not just the outer edges of it, current use and occupancy mapping is especially useful for resource management.

Peter Paul gathers sweetgrass, which is used for purification rituals. Some plant materials are especially important for ceremonial purposes, and First Nations usually document the harvest locations during their use and occupancy mapping studies.

In some situations both the historical and within living memory time frames might be inappropriate. Take, for example, a community doing research to assess the impacts of industrial development. It would likely have a different definition for its "when" parameter than the ones used in either historical or current use and occupancy studies. Because of budget constraints, the impact assessment research might focus only on the families most likely to feel the greatest impacts of development. Those would be the families that had been active in the zone of impact in the years immediately preceding the research. It is conceivable that few elders would be interviewed for such a study.

4 Where

Where is your study area?

When you ask somebody to do a map interview, what extent of the earth's surface are you interested in? What is the study area? If the main objective is to obtain data to be used as evidence for proving aboriginal title, the area of relevance would cover the territory defined as traditional by elders, and for which obtainable use and occupancy data could be anticipated.

If the study relates to an Inuit community in Nunavut, the negotiators and lawyers are not interested in the fact that a member once killed ducks with a Delaware acquaintance in the marshes of Walpole Island, near the Canada-United States border. But what if that person harvested ducks with relatives on a neighbouring Inuit community's territory; are those sites to be mapped? What about sites much farther afield, on one of the more distant village's territory? These kinds of questions need to be considered and answered prior to the first interview. Sometimes information that emerges from data collection warrants a rethinking of how the study area was initially defined, and occasionally this results in a slight modification. This also sometimes happens with the who, when, and what (but never with the why) parameters.

5 What

What questions are you going to ask participants?

Any of the five parameters can be difficult to define. Almost always the one that is most time-consuming has to do with what. What kinds of data do you want for your maps? There is a huge range of different kinds of mappable oral history data, or themes, that can be relevant to meeting your primary objective: harvesting areas, habitation sites, travel and trade routes, place names, and so on. It is important to choose a small number of themes, usually no more than two. There are two advantages to being so selective.

- You can do a thorough job so that the research product is complete enough that subsequent projects can build on it from a position of strength.
- You can avoid excessive response burden.

If you decide on harvesting sites as a theme, it is necessary to think about who the consumers of the harvests are. Do you want mapped data that represent where people obtained resources that were used to feed themselves and their community, or that were used for sale on commercial markets, or for trade with distant kin, or that ended up in tourists' freezers? Do you want to map a site where a resource is harvested and a portion feeds your community and a portion is sold on international markets? These kinds of considerations need to be resolved carefully. Questions must be framed in a way that allows participants to know exactly what the interviewer is after.

The interview guide, which is the actual list of questions to be asked, is the concrete end product of all the decisions made concerning the "what" parameter. Even a quick look at it can say a lot about a project's chances of success because its length and complexity are related to the way people will likely experience the mapping sessions. The interview guide is where the overly-ambitious project gets into major trouble by generating too much response burden. It is also where the more carefully designed project succeeds. The effective interview guide is carefully constructed and then tested on a few individuals to see if its wording is clear, and to make sure the interviews are not going to be too long and difficult. Some changes might be necessary, after which the guide is finally administered to participants.

The effective interview guide is carefully constructed and then tested on a few individuals.

6

Principles of Research Design and Implementation

1 Respect
2 Confidentiality
3 Informed Consent
4 Focus
5 Flexibility
6 Consistency
7 Organization
8 Caution
9 Self-Reporting
10 Integrity
11 Data Diamond
12 Fun

Research has two basic aspects: design and implementation. You design it, then do it. You construct the blueprint,then you collect data according to that blueprint.

There are a number of principles that are very helpful when designing and implementing your work. Projects often take on a life of their own, going off in this direction today, then pulling you off in a different one tomorrow. Principles are guidelines that keep you on track, and guarantee that your project stays manageable. Some are more important than others; some may apply more to certain kinds of data collection. The principles discussed below have made a big difference for a number of successful land use and occupancy projects.

1 Respect

Respect participants in a heartfelt manner, at all times.

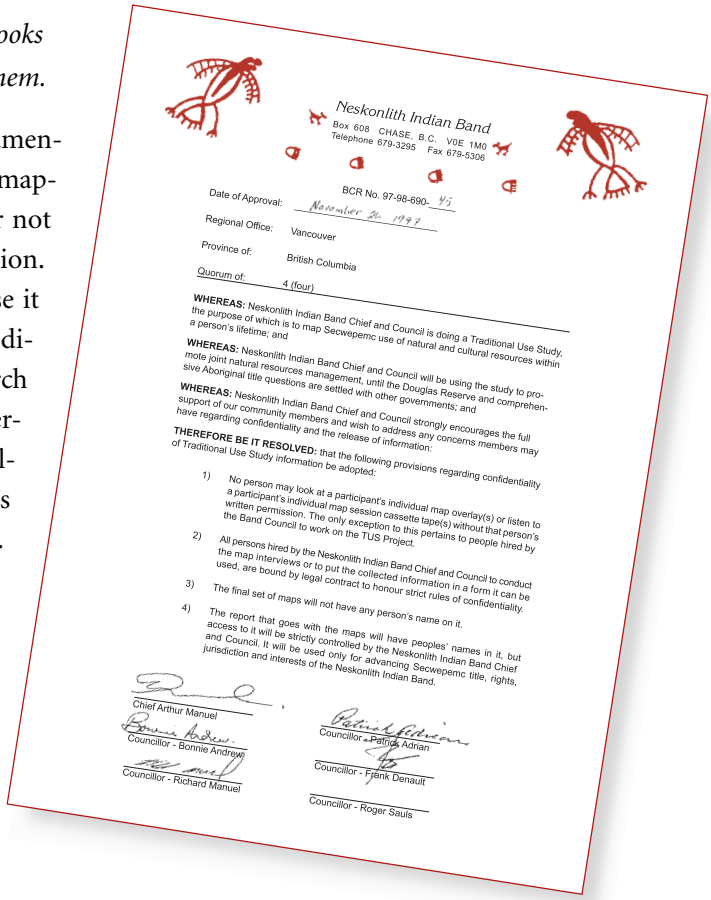
Respect is at the top of the list. I have already referred to the need for honouring the limitations of participants and workers. Most individuals can sense whether someone respects them, or is faking it. They can also sense whether the community researcher genuinely honours the experience that is being shared during an interview, even if that experience comes from a belief system different from the interviewer's. Some of the questions asked during an interview are private and intimate. Elders are often asked to talk

about things for which many aboriginal people have been judged and ridiculed. The legacy of the residential schools, *The Indian Act*, and other government policies have left their mark, making some participants reluctant to share what they know about cultural sites, especially related to spirituality. Many communities have had experiences with outside researchers, consultants, and even with some of their own people, that have not helped the situation.

Every person associated with the project must be willing to respect participants in a heartfelt manner, at all times. Few things pertaining to research can make the rounds in a small community faster than an incident involving disrespect, especially if an elder is involved. In the context of the interviewer-participant relationship, disrespect is like breaking a trust.

2 Confidentiality

Adopt official mechanisms that define what confidentiality looks like, in concrete terms, and follow through with honouring them.



Neskonlith Indian Band
Box 608 CHASE, B.C. V0E 1M0
Telephone 679-3295 Fax 679-5306

Date of Approval: November 20, 1997 BCR No. 97-98-690- 45

Regional Office: Vancouver

Province of: British Columbia

Quorum of: 4 (four)

WHEREAS: Neskonlith Indian Band Chief and Council is doing a Traditional Use Study, the purpose of which is to map Secwepemc use of natural and cultural resources within a person's lifetime; and

WHEREAS: Neskonlith Indian Band Chief and Council will be using the study to promote joint natural resources management, until the Douglas Reserve and comprehensive Aboriginal title questions are settled with other governments; and

WHEREAS: Neskonlith Indian Band Chief and Council strongly encourages the full support of our community members and wish to address any concerns members may have regarding confidentiality and the release of information:

THEREFORE BE IT RESOLVED: that the following provisions regarding confidentiality of Traditional Use Study information be adopted:

1) No person may look at a participant's individual map overlay(s) or listen to a participant's individual map session cassette tape(s) without that person's written permission. The only exception to this pertains to people hired by the Band Council to work on the TUS Project.

2) All persons hired by the Neskonlith Indian Band Chief and Council to conduct the map interviews or to put the collected information in a form it can be used, are bound by legal contract to honour strict rules of confidentiality.

3) The final set of maps will not have any person's name on it.

4) The report that goes with the maps will have peoples' names in it, but access to it will be strictly controlled by the Neskonlith Indian Band Chief and Council. It will be used only for advancing Secwepemc title, rights, jurisdiction and interests of the Neskonlith Indian Band.

Chief Arthur Manuel

Councillor - Bonnie Andrew

Councillor - Richard Manuel

Councillor - Patrick Adrian

Councillor - Frank Denault

Councillor - Roger Sauls

Confidentiality is closely related to respect. It, too, is fundamentally about trust. Even a single breach of it can undermine a mapping project. Individuals can have all kinds of reasons for not wanting others to have access to their personal information. Most are concerned that government might get it and use it against them in some way. Some are even afraid about individuals from their own community seeing it. In every research project confidentiality is an issue, and most projects underestimate the amount of concern that emerges once data collection starts. It is smart planning to anticipate people's concerns and think of things you can do to address them. You should do this long before the first map interview.

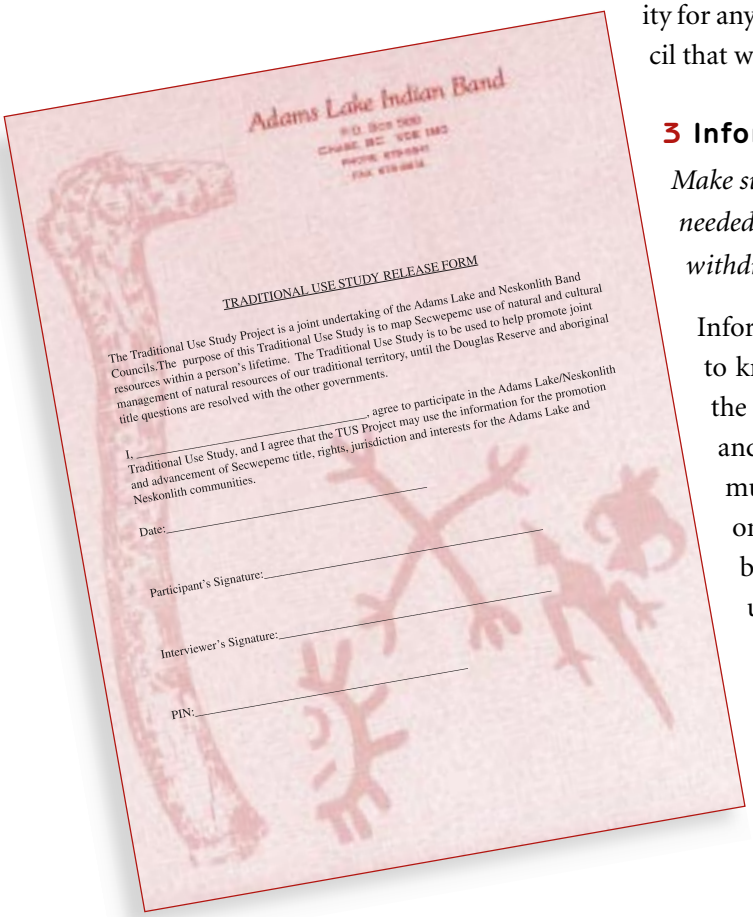
For most of us, it is not sufficient to hear, "Don't worry, your data will be kept confidential." People generally want to know how the data or information will be kept confidential. What does confidentiality actually look like, in concrete terms that can be easily visualized and understood? By way of illustration, here are four mechanisms that some projects have adopted.

- No person may look at a participant's map biography or listen to the session tapes without the participant's written permission. The only exceptions are people hired to work on the project.
- Researchers hired to conduct the map interviews or analyze the data are bound by legal contract to honour strict rules of confidentiality.

- The final composite maps used for negotiations do not display participants' names.
- The report that accompanies the maps does have people's names in it, but access to it is strictly controlled by the aboriginal administration, and it will be used only for advancing the title, rights, jurisdiction and interests of the group.

Adopt whatever works for your community. The important thing is to be able to follow through on what you tell people. Since confidentiality is in the hands of your administration, its safekeeping is basically an issue of political will. That is why it is a good idea to obtain a firm commitment from your local politicians, in writing. A resolution outlining the mechanisms designed to guard confidentiality, with the leaders' signatures on it, is something tangible your workers can show to participants. People like seeing that statement of support, and they like having somebody they can hold accountable. It is appropriate that these be the political leaders, since the interviewers are requesting the data on their behalf.

Sometimes land use and occupancy data end up in court. Most individuals do not like the idea that their information might be examined by lawyers, or that they might have to take the witness stand. People have the right to know that it is possible their leaders will someday ask them to appear in court on behalf of their nation. This is a remote possibility for any given person, and ultimately it is the nation's own council that will select your witnesses.



Adams Lake Indian Band

TRADITIONAL USE STUDY RELEASE FORM

The Traditional Use Study Project is a joint undertaking of the Adams Lake and Neskonlith Band Councils.The purpose of this Traditional Use Study is to map Secwepemc use of natural and cultural resources within a person's lifetime. The Traditional Use Study is to be used to help promote joint management of natural resources of our traditional territory, until the Douglas Reserve and aboriginal title questions are resolved with the other governments.

I, _____, agree to participate in the Adams Lake/Neskonlith Traditional Use Study, and I agree that the TUS Project may use the information for the promotion and advancement of Secwepemc title, rights, jurisdiction and interests for the Adams Lake and Neskonlith communities.

Date:_____

Participant's Signature:_____

Interviewer's Signature:_____

PIN:_____

3 Informed Consent

Make sure that potential participants have the information needed for them to offer informed consent, and that they can withdraw from the process at any time.

Informed consent is also related to respect. People have a right to know about the nature of the project, its objectives, why the data are needed, what the anticipated uses of them are, and so on. This principle is not only about the rights of community members. The success of the project may depend on it. Widespread participation and quality data will not be forthcoming unless individuals have come to their own understandings about the need for their cooperation. Such understanding can only be based on information. People must also have the right to consent, without pressure or coercion. Similarly, successful research recognizes a participant's right to withdraw his or her consent, and to cease participation at any time.

Each individual who agrees to participate in a land use and occupancy project should sign (or make their mark) on a release or consent form. The typical form briefly states the purpose of the research and intended uses of the data. The participant's name and date are printed on the form, and both the interviewer and interviewee sign it. By signing, the person formally agrees to participate and allows the aboriginal administration to use the information for the stated purposes. Most forms assign a participant's identity number for purposes of record keeping, and some also specify any additional constraints on data use that are expressed by the participant.

Photo © Shirl Hall, Box 854, Wagilsla, B.C.

Elder Evelyn Windsor shows Benny Stewart and another student how to dig for a traditional Heiltsuk medicine plant, near Bella Bella, British Columbia. Use and occupancy mapping invigorates a people's pride in its cultural heritage, and encourages young people to get back to their roots.

4 Focus

Maintain a workable focus by being realistic about the number of themes you attempt to map in a single project, and by being selective in constructing the interview guide so the average session is not too long.

Focus, a fourth principle of good research, was touched on in the section on response burden. It is important to be careful about the number of different themes you try to map in a single project, and it is critical that you are selective in constructing the interview guide so that the average session is not too long. Remember that focussing on the primary objective of the project keeps everything else on track. Letting go of focus is like forgetting your research purpose. If you lose focus, you may end up with a project that is out of control.

5 Flexibility

Be flexible in the administration of the interview guide while also maintaining sufficient focus, "sufficient" being that which ensures the primary objective is finally met.

Flexibility allows staff to deal with situations as they arise. Like all human endeavour, research is organic in nature. It tends to take on a life of its own. People have their own preferences about when and where they want to do their interviews. They have their own ideas about where the research should head and how it might be modified. The research team learns in the doing. There will be changes in methodology, usually minor ones, as data collection proceeds. The trick is to be flexible while at the same time maintaining sufficient focus, "sufficient" being that which ensures the primary objective is finally met.

Finding this balance is not always easy. Picture this: the data collector has an interview guide to work with, which has been designed with a clear objective and focus in mind. Now she is sitting down with an elder who has his own ideas about what kinds of cultural information the

community needs to put on maps. He may also think that this much younger person ought to just put the tape recorder on, respectfully keep her mouth closed, and listen. Situations like this are not uncommon. After all, the social scientific model of inquiry has been parachuted in on top of the traditional indigenous way of passing knowledge from one person to another. So, how to respect the elder and still find a workable balance between focus and flexibility? When elders are well informed about why questions are being asked in a strange or seemingly intrusive manner, they are almost always willing to meet you more than half way.

Photo© Shirl Hall, Box 854, Wagjisla, B.C.

Deana Hunt of the Heiltsuk First Nation picks seaweed. Food plants remain important resources for aboriginal communities, and land use and occupancy mapping typically documents many of the harvest sites.

6 Consistency

Have all interviewers follow the same methodology in a highly consistent manner.

Consistency means doing things the same way each time. It applies to each of the hundreds of little conventions that are determined by the research design. A convention is simply an agreed-on way of doing something. There might be several dozen conventions that govern, for instance, how data and symbols are to be indicated. Some examples are listed.

- What colour and thickness of pen to use when labelling an overlay.
- What colour and thickness of pen to use when marking symbols on an overlay.
- How to deal with a feature that has more than one symbol designation.
- How to indicate that a particular datum is only an approximate location.
- How to deal with a mistake made while marking a feature.

These and other conventions instruct the worker how to deal with any conceivable situation pertaining to the marking of data onto paper maps or plastic overlays.

Marking data is only one of a number of areas of research design. The following are some of the others, each one of which is made up of its own bunch of conventions: assignment of participant numbers; selection of map scale; interview procedure; interview guide; selection of symbols; labelling audiocassettes; keeping records; taking care of data. The hundreds of conventions involved, taken as a whole, make up the research methodology. The methodology informs the worker how to deal with any conceivable situation relating to any aspect of data collection.

It is important for all data collectors to follow the same methodology, and for each one of them to follow it consistently. One reason is that the dollar costs of not doing so can be very high. Data collection is only the

fourth in a sequence of tasks (Figure 2, page 10), each one of which can be a major undertaking in terms of labour and expense. Keeping each component within budget largely depends on how consistent the technicians involved in the preceding steps have been in their work. A data collector with a casual attitude or inclination to be sloppy can create enormous amounts of unnecessary work for the transcribers, digitizers, and others.

More importantly, consistency is one of the foundations of social science because it is closely tied to something called reliability, which is a cornerstone of the scientific method and a basic measure of data quality. In fact, consistency is an essential aspect of all the basic indicators of quality, which are discussed below. This is why a willingness to pay attention to detail is an important consideration in the screening and hiring of data collectors.

Aloysius Benoit, Gloria Benoit, and Phil Jeddore pose with some of the 2,200 map biography overlays and 260 audiocassettes that contain the Miawpukek First Nation's land use and occupancy data. The custom-built plywood boxes make it easier to keep the raw data organized and help protect them from wear and tear when in transit or storage.

7 Organization

Stay organized so that you can set up for interviews quickly, track raw data easily, and have the project notebook material you need to write a quality methodology report.

Organization requires people to take detail seriously. First-time researchers are usually surprised at how quickly raw data, overlays and cassette tapes accumulate, and how much research equipment and materials they have to handle on a daily basis. Imagine a research office, typically quite small, with a number of large map tables, many hundreds of overlays with data on them, four or five hundred base maps, hundreds of tapes with data, and all the recording equipment and supplies needed by a team of three or four workers. Good organization allows you to stay on top of it all.

It is almost impossible to stay organized if there is not a secure, well-lit interviewing room that has space for a number of mapping tables and whatever is needed for elders to feel comfortable during interviews. Conducting the map sessions in one centralized, well-equipped room is more productive than trying to interview participants in their homes. In addition to a good working space, obtaining custom-built storage boxes for your overlays and cassettes helps with organization.

When a worker can consistently get his hands on whatever he needs so he can set up his interviews quickly, you have good organization. When a worker can track any piece of raw research product, and lay her hands on it quickly, you have good organization. When all your data collectors' project note books are updated in a manner consistent with project methodology, on a daily basis, the project is likely in great shape.

8 Caution

If you are going to err in the recording of data, err on the side of caution.

Caution is generally a wise policy when it comes to the design of oral history mapping and collection of data. If you are going to err, do so on the side of caution. For instance, if a participant says, "I think I killed a caribou there," the interviewer should ask for clarification before marking the site. If the hunter's response still indicates uncertainty, the worker might say "OK, we've got that information on tape, and we're not going to mark the site on the map." The datum is not lost because it is captured on audiocassette and appears in the transcript record.

This principle of erring on the side of caution lets you, if needed, make the argument that your maps are conservative, that they understate the community's dependency on cultural resources. This can be useful in some negotiating processes and in court. You do not want someone to be able to make a case that the maps are exaggerations. When undertaken properly, this kind of research always produces impressive results.

A Mi'kmaq person digs for clams during low tide, at Summerside, Nova Scotia. Many coastal communities rely heavily on resources from the sea, including a remarkable variety of tidal and bottom-dwelling creatures like shellfish, sea urchins, sea cucumbers and crabs. Harvest sites are often mapped.

9 Self-Reporting

Design your current use and occupancy research to obtain as much self-reported data as possible, and in a way that lets you sort out which data were reported secondhand.

Self-reported data refer to the notion that, generally speaking, when you are doing current use and occupancy research, you want as much of your information as possible to be reported by individuals who have had direct experiences of the mapped features they indicate. It is better to have Jim Thusky report his own big game kill sites than to have his brother indicate them on Jim's behalf. It is preferable to have Gloria Lariviere, who was snaring rabbits at the old Point Portage settlement in 1929, relate her own experience of those times, instead of having the relative or friend who was with her tell you about them.

The principle emphasizes two things. First, it is best to have individuals tell their own stories. Second, if you ever need to, you should be able to revisit a data set and sort out which data were self-reported, and which were reported by individuals secondhand. This is not to say that secondhand or hearsay information is not important. On the contrary, it is very valuable and forms a foundation of the community's living oral tradition, which the court in *Delgamuukw* said must be given great weight.

10 Integrity

Tape record the interviews and design other aspects of data collection and record-keeping in a way that lets you track the source of any particular datum.

Integrity of data refers to traceability. If your data have good integrity, you can trace back any of the thousands of individual features appearing on a final set of maps to its source. The ability to do this is important for a variety of purposes. If the maps are being used administratively for land use permitting for instance, the users want the data to be easily sourced to the people who have knowledge about the sites in question. If maps are being used in court to support aboriginal title, claimants need the data to be linked to source transcripts. Entire land use and occupancy data sets have been dismissed by judges because integrity was not demonstrable.

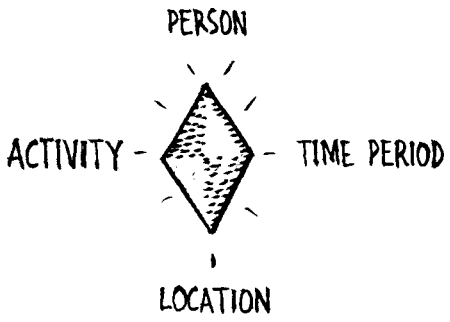
A demonstration of integrity might look like this. Imagine you are looking at the composite for big game kill sites, on which there might be 1,000 points. You should be able to select any point and identify which individual's map overlay the original point can be found on, the date of the interview, and the name of the interviewer. You should also be able to locate the transcript page on which the respondent refers to his big game kills in the area under consideration, and the place on the audiocassette where you can hear his voice talking about it.

Excellent data integrity requires that each mapping session be recorded on audiocassette. Occasionally a community researcher is concerned that certain individuals will not participate if there is a tape recorder involved. Having conducted many hundreds of map interviews, I have never found an individual who, having initially objected to being recorded, persisted to the point of not participating. When given enough information about the project and opportunity to ask questions about things like confidentiality, and time to think it over, people always agree to have their sessions taped. If somebody refuses to do a map biography the issue is almost certainly not about recording. The researcher's job is to discover what the real problem is and address it.

In addition to good data integrity, having all map sessions taped is a necessity for any project that is serious about obtaining detailed information about the mapped features. It is impossible to make a good written record of all relevant data during a map session, especially if the interviewer has her sights on data diamonds.

Entire land use and occupancy data sets have been dismissed by judges because integrity was not demonstrable.

Fish harvest sites are usually mapped, regardless of the method of capture employed, as long as the species are used for local consumption. Chief Vernon Morris of the Muskrat Dam First Nation retrieves a pickerel from the Severn River, Ontario using rod and reel (above), while a fellow band member removes sturgeon from a net (below).



11 Data Diamond

Train your interviewers to think in terms of data diamonds, which will give your maps historical depth and provide concrete evidence of longtime use and occupancy.

Data diamond is an idea or mental picture that is useful to keep in mind both when designing research and while interviewing people. It reminds data collectors of the kinds of information that the land use and occupancy project is after. Once interviewers get into the habit of thinking in terms of collecting diamonds, they are much more likely to be thorough in their questioning and therefore successful in obtaining the most useful data possible. The diamond shape, with its four points, refers to the linking of four kinds of information: a person's name (the who), an activity (what), a location (where), and some indication of time period (when).

Each time a feature is marked onto an overlay, whether it is a point to indicate a moose kill site or a polygon for a burial ground or a line to represent a travel route, the participant has automatically provided one diamond. For example, 22-year old Jim Thusky does his map biography in December 1999, and the interviewer asks him if he has ever killed moose anywhere on the map sheet they have in front of them. Jim says "yes" and indicates two kill sites, one of which is on a tiny island called Yost, and the other at the north end of Soreback Portage. The instant Jim indicates those sites he has provided two diamonds: "Jim Thusky – moose – Yost – 1990s" and "Jim Thusky – moose – north end Soreback Portage – 1990s." If Jim states that he was with his father Abe when Jim shot the animal on Yost, he has automatically provided a third diamond: "Abe Thusky – moose – Yost – 1990s." The only thing the interviewer marks at each of the two kill sites, is the symbol for moose, which represents one of the diamond's points. He does not draw a little diamond on the overlay at Yost, and he does not write the words "Jim Thusky" or "Yost" or "1990s" on the overlay because they are all givens. (He also does not add "Abe Thusky" to the overlay because that information is captured on audiocassette.)

Land use and occupancy map projects are about collecting these diamonds. A single project will produce thousands of them, whether the interviewers are aware of it or not. Data collectors who do not think in terms of diamonds will still obtain them. The advantage of being conscious about diamonds is that by actively seeking them out, many hundreds or thousands more are obtained, without interviewing additional participants. In addition, the descriptive information that can be linked to each feature on the final set of composites has much more detail and historical depth. It is these kinds of descriptive data which are the most powerful evidence that your group has been active on your territory.

Like all other animal resources, fish harvest sites are mapped regardless of the season the resources are obtained. Alvin, Raymond and Larry Iron pose with the northern pike, whitefish and sucker they have just removed from a gillnet on Pinehouse Lake.

For instance, the interviewer asks 75-year old Gloria Lariviere if there are any old settlement sites she has ever stayed at, and she indicates one at Point Portage. This one diamond ("Gloria Lariviere – settlement – Point Portage – sometime from 1924 to 1999") is useful, but there is an opportunity here to obtain much more information about the Point Portage settlement. The interviewer who is on the lookout for diamonds would ask a series of probing follow-up questions, and she would do so using the image of the diamond as a guide, collecting as many of the four points of each diamond as possible. Perhaps what Gloria remembers is that when she was five years old she and her older brother Ron spent a winter at the settlement in her father Barney Michel's cabin with his brother Frank, and the two men trapped there from early October until spring breakup. Gloria also provides the names of four other men who were living at and trapping from the Point Portage settlement that winter, and adds that her father was really proud of her and Ron because they both snared rabbits, just out behind the cabin, all by themselves. Diamonds galore! There are 16 of them here: eight named individuals (persons) each stayed at the old settlement (activity) at Point Portage (location) in 1929 (time period); six men did trapping based out of the settlement in 1929; and two children each snared rabbits there the same year. Three of these diamonds are represented in Figure 4.

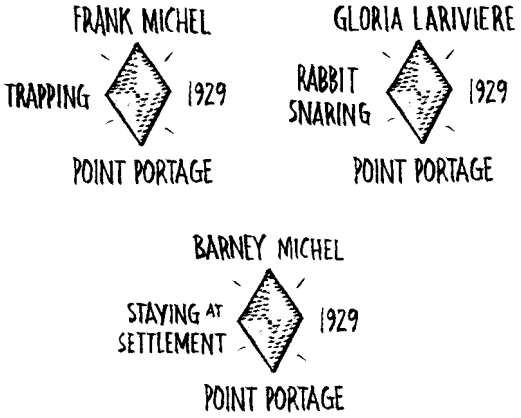


FIGURE 4
Three of Gloria's Diamonds
When Gloria Lariviere was five years old her father took her to the old Point Portage settlement. During her map biography interview she provided 16 diamonds for that trip, three of which are represented here.

It is especially important to collect diamonds when interviewing elders because they are capable of providing evidence of use and occupancy farther back in time. Gloria has already placed eight people at Point Portage 70 years ago, but maybe her father had also told her that Frank and he used to base themselves out of the settlement long before Gloria's time, that they had been born there, and that they had grown up there at the same time Jacob Jerome's grandchildren did. The genealogical records show that Barney was born in 1894 and Frank in 1886, thus firmly placing the family at Point Portage well before the turn of the twentieth century, about six generations ago.

There are many of these kinds of data contained in the oral traditions of most aboriginal communities. Research should be designed so that as many as possible of the elders' diamonds are recorded because these bear testimony to the longtime historical use and significance of each mapped site. They give your composites the added dimension of historical depth, and convert the notion that "we've used our territory for a long time" into something concrete. With diamonds, the argument becomes alive with the names and stories of real flesh and blood ancestors. This kind of detailed information is invaluable for education purposes, and not easily ignored by agencies or courts.

Consultant Petr Cizek makes a futile gesture of rolling up his sleeves, as he gets smoked at table soccer by a gleeful Chief Peter Marsellais during a break in Nahanni Butte's land use and occupancy project. The work often involves long hours and repetitive tasks, and it is important to find ways to have fun with your co-workers.

12 Fun

Have fun, and find ways to celebrate the process.

Fun, as a research principle, is to remind us that research is part of a bigger picture called life, and that there should be plenty of moments of enjoyment and laughter. As challenging as it can be at times, the job of collecting land use and occupancy data should not feel heavy or plodding. Many dimensions of indigenous oral histories are inherently beautiful. Many elders and young harvesters bring an enthusiasm and quiet excitement to the map table, and an optimism that their contribution to the big picture can make a difference for their people. Research projects can be designed to allow for spaces of celebration and lightness. The research is not only about the final product. This principle of having fun helps project staff remember that the process itself has immeasurable benefits.

◆ ◆ ◆

The 12 research principles discussed above have proven effective in producing numerous successful use and occupancy map sets. The principles are similar to the project's five big defining characteristics in one respect. Like those five parameters, if the principles are given due regard in the design and implementation of data collection, all the hundreds of methodological details tend to fall into place. The principles are the guidelines. When it comes to land use and occupancy mapping, they are the basis of good social science.

7 Measuring Quality

In addition to the parameters and principles of research, you should pay close attention to the indicators of data quality. These are characteristics of data that can be evaluated and measured. They are the things to which potential users would give consideration when deciding whether your maps are useful. Critics would look at them closely when trying to demonstrate that your maps are not up to scratch.

Instead of discussing these five measures of quality in this part of the guide, I could have talked about some of them in the previous section as research principles. Likewise, you could legitimately regard some of the principles – like integrity, self-reported data, and data diamonds – as indicators of quality because their presence and relative amounts can be observed and measured. There are many connections among all these concepts and it is difficult (and unnecesarry) to pigeonhole them.

1 Reliability
2 Validity
3 Accuracy
4 Representativeness
5 Consensus

1 Reliability

Could somebody else do your study over again, using your methodology, and come up with the same maps?

Reliability is a cornerstone of social science because it has to do with reproducibility. Can the research results be duplicated? If a fire destroyed all the map biographies and all the composites, could the project be done a second time, and produce the same results? To have good reliability

you need to have two things. First, there has to be a carefully designed methodology, administered in a consistent manner from one interview to the next. Second, there has to be a thorough written account of that methodology. That account consists of definitions of the parameters and detailed descriptions of the conventions adopted. Theoretically, a different set of data collectors should be able to re-interview the same people and end up with a similar set of maps. In other words, reliability has to do with predictability of outcome.

The methodology is the project's set of instructions. It is important not only to help prove that your data are reliable, but also to demonstrate they are valid. Reliability, validity, and accuracy are words used interchangeably by most people, but social science uses each of them in different ways. There are complex interrelationships among the three concepts, but these overlaps need not concern us.

2 Validity

Do your maps say what you claim they say?

Validity refers to the meaning of your maps. Do they mean what they are supposed to? Do they say what you claim they say?

This might sound confusing, so here is an example. Imagine you are looking at one of a community's finished composite maps, the one depicting big game kill sites. The title reads: "Jackfish Indian Band Kill Sites of Big Game Animals Used for Community Consumption." The Jackfish people are known to eat a lot of moose meat, but you are still surprised to see 2,000 moose sites on their map. It is also known that their men do a lot of guiding for American trophy hunters.

You decide to check the methodology report, and discover that the interview guide's moose question does not instruct participants to mark only those kill sites for which animals were used to feed community members. You then listen to segments from a small number of tapes to hear how interviewers handled the moose question. Not surprisingly, they did not specify what the interview guide had not instructed them to. How many of the 2,000 moose sites provided meat for village residents, and how many are sites where Jackfish guiding parties met with success but the meat ended up filling tourists' freezers? This particular kill site (the one on tiny Yost Island), does it really belong on this composite, given the title of the map? If a question like this cannot be easily answered, the data have poor validity. The meaning and significance of the map is open to too much interpretation.

Maybe the picture gets even worse. When you listened to the sample of tapes you found that the interviewers used different key words when asking the moose question. One would ask for places where moose were "shot," while another asked for sites where they were "hunted." A third data collector tended to use the word "get," while the fourth asked participants where they had "looked for" moose. Sometimes the same interviewer would switch back and forth in his choice of key words, even during the same mapping session. The list of key words can be expanded: shot, hunted, gotten, looked for, killed, shot and killed, retrieved, harvested, and so on. Each of these has different or ambiguous meanings. Now validity is in serious question. For instance, moose that were shot but not retrieved do not belong on the Jackfish big game map as it is titled. Nor do moose that were looked for but never seen, shot, and retrieved. Just what does the composite mean?

To avoid this ambiguity the interviewer must be clear about the nature of the data that are being sought. A well-constructed interview guide that uses carefully selected definitions and key words, and data collectors who consistently convey those definitions to participants and use those key words, will ensure good validity.

Two members of the Lutsëlkè Band look for caribou on the tundra east of Yellowknife, Northwest Territories. Some land use and occupancy studies map the areas over which hunters scan the landscape for animals. When using binoculars, as in the photograph above, people can see great distances, which raises questions about exactly what is being documented when you map where hunters have "looked for" big game. This is an issue of validity, and it points to the importance of selecting the key words for your interview guide very carefully, and also of using them consistently when interviewing.

3 Accuracy

Are the features on your maps located with enough precision to meet your project's objectives?

Accuracy has to do with the precision with which mapped sites are indicated. How precise is the location on the map where Jim Thusky saw the remains of old Jason Monabu's cabin? Does the spot marked on the map truly represent the location of that cabin on the earth's surface? Assume that Jim got it exactly right when he showed the interviewer where to make the point. If the base map used for data collection is 1:250,000 scale, the ink dot representing the datum point can easily cover a quarter kilometre on the ground. If the base map used is 1:50,000, the ink point covers about 50 metres, and the datum is thus more accurate. Accuracy is also related to things like the participant's ability to read or interpret maps, his ability to see well, and his willingness to be careful when indicating sites.

If you wanted to verify accuracy, you could compare where Jim indicated Jason's cabin to where other participants independently located it. This is called triangulation, and it offers a basis to make the best possible judgment about where the likely location of the feature is, without additional expenditure of research budget. You could also do what is called

ground-truthing, and take the base map and a global positioning system (GPS), and go with Jim to the actual site.

Maybe you discover that Jim has not been precise and the mapped point is a kilometre away from the actual location. This would not necessarily be a problem, depending on what kind of feature is involved and whether the exact location is required to meet the objective of the mapping project. For instance, if the data are intended for curricula development, the lack of precision would not likely be troublesome. However, if the data are needed for operational planning, which involves operations like logging and depends on detailed data at a scale of 1:20,000, there is a problem. A caterpillar operator building a haul road, and using a map displaying data that are in error by as much as a kilometre, can do damage as he decides where to construct the road. If the feature is indeed an ancestor's cabin site or a burial ground, and the purpose of the mapping is to preserve it, then that amount of error is unacceptable because it can result in the site being destroyed. The same degree of accuracy, however, would not be problematic for a big game kill site, since the accuracy of the individual point is not the issue, but rather the pattern shown by the collection of points.

Dale Smith and Henry Smith of Pinehouse hold up the snowshoe hare they have just retrieved from snares. Many kinds of small game are important sources of protein for First Nation communities, and harvest sites are often recorded during mapping projects.

Accuracy is related to scale of mapping, which is determined by the main objective for doing the research in the first place. Even if the community wants data for operational planning, in most cases it is nonsensical to think that an inventory of cultural sites can be mapped at 1:20,000 scale. Many communities' territories easily cover 40x1:50,000 map sheets, which is the equivalent of 250x1:20,000 sheets. The sheer awkwardness of working with a set of 250 maps for data collection purposes, and its effect on response burden, are reasons to abandon the notion. In addition, there is so much detail and often so few recognizable reference points on a 1:20,000 sheet that the participants sometimes have difficulty locating themselves. It is important to be realistic about the strengths and limitations of the various map scales for data collection purposes. The community should decide which scale best suits its needs.

Often the best scale is 1:50,000 because the resultant map composites are detailed enough to use as a reference tool for many planning and management purposes, while still providing the information needed for claims processes. You can refer to the composites whenever the need arises to obtain more complete data for any area or feature, or to improve the accuracy of existing data. A mapped inventory of cultural sites, collected at 1:50,000 scale, can be effective for operational planning when used in consultation with elders during on-site visits and in conjunction with GPS corrections. An advantage of collecting your data at 1:50,000 (and not at the operational planning scale of 1:20,000) is that it encourages government

and industry to consult with your community. Outsiders are more likely to acknowledge that real live First Nation people are an ongoing and necessary complement to the imperfect and always incomplete set of reference maps.

Having a process in which the mapped data are ground-truthed a few at a time, on an ongoing basis, is advantageous for another reason. Ground-truthing large numbers of sites is very expensive and can cripple research budgets if your are not careful. The community should carefully define its priorities, and use as much as possible of the available funds to interview key elders before deaths result in more permanent loss of traditional knowledge. Sometimes immediate ground-truthing of a site is warranted because the participant may, in extreme cases, be the only person alive who knows about the site, and there is uncertainty as to its location. It is important for your community, and not the funding agency, to define how much verification of accuracy is needed, and when.

4 Representativeness

Are the mapped data that participants provided characteristic of the community the participants belong to?

Representativeness refers to whether the data speak for the population the maps claim to represent. To what extent are the data provided by the participants characteristic of the population the participants belong to? A number of things have to be looked at when answering this question. How were individuals selected when compiling the list of people to be interviewed? What were the criteria for defining that study population? Are those criteria consistent with the primary objective of the project? How many members of the study population were interviewed, and what percentage does that number represent? Did participants provide complete, high quality data?

If the participant selection criteria are valid in terms of the project's objective, then two simple statistics, the number of participants and the coverage rate, provide a good sense of representativeness. For instance, if 160 individuals complete map biographies, then participation is 160. If the study population is 200 persons, then the coverage rate is 160 over 200, or 80 per cent, which suggests good representativeness. Coverage of 10 per cent would suggest it is poor.

Whether the objective of the use and occupancy study warrants widespread participation of all adults or a sizeable subset of adults, the idea is generally the same: 70 or 80 per cent coverage suggests good representativeness. However, if the study is dependent on a small number

of participants, sometimes called key informants, then it is important to have complete coverage of that group because the absence of even one informant's data can result in weak representativeness.

To give a simplified example, pretend the Blue Heron Band designed a mapping project to document the extent of its small game harvesting. Its final composite shows 575 places where band members have snared snowshoe hare, and you want to know whether the map represents the pattern and extent of band members' rabbit kill sites. To determine this you would look at the methodology report's description of how persons were selected to be interviewed. First, you would determine what the population group is. If hare is a basic food and all adults are known to be active snarers, the study population might consist of all adults, men and women, in which case the study is like a survey. If, on the other hand, there are only a few women who specialize in rabbit snaring, and are known to harvest huge amounts for distribution to other band members, the study population might consist of only this handful of key informants.

The harvest locations of big game species, both terrestrial and marine, are usually recorded during land use and occupancy mapping studies. In the photograph above a young Algonquin girl takes a close look at a moose that has just been shot on a beach near Rapid Lake, Quebec. Below, Inuit men haul ashore a bearded seal near Kangiqtugaapik (Clyde River) on Baffin Island, Nunavut.

In either case, you would then look at the report's account of coverage rate. If it were only 10 per cent you would suspect that representativeness is poor. This is because if more study population members were to be interviewed, and their hare data added to the composite, changes in pattern would emerge. Some of the gaps would fill in and some of the edges of data distribution would expand outward. However, in the the survey of all adults, if coverage was 75 per cent, chances are that you could keep doing interviews, adding data, and not see resultant changes in overall pattern. At that point you have good representativeness. On the other hand, if the study population was only a small number of women, you might need 90 or 100 per cent coverage before the interviewing of an additional person would have no major effect on the distribution of mapped sites.

5 Consensus

Do the users of your maps agree that they are useful for the intended purposes?

Consensus is not really an inherent characteristic of data. But you can measure it, and it does reflect the degree to which your maps are reliable, valid, accurate, and representative. Suppose you table your maps, maybe at a co-management meeting where a number of different agencies and user groups are negotiating. If those people take a close look at the maps and at the companion methodology report and find them to be good quality, the composites themselves are likely to achieve consensus.

Excellent research is supposed to provoke controversy in some fields of inquiry, but not in this one. Land use and occupancy mapping has been around in Canada for a long time. The basic methodology is well developed and research product has been used in many different contexts, including co-management negotiations and courts. If your maps do not achieve consensus regarding their usefulness, it is probably because they are of questionable quality.

8

Creating a Culture of Research

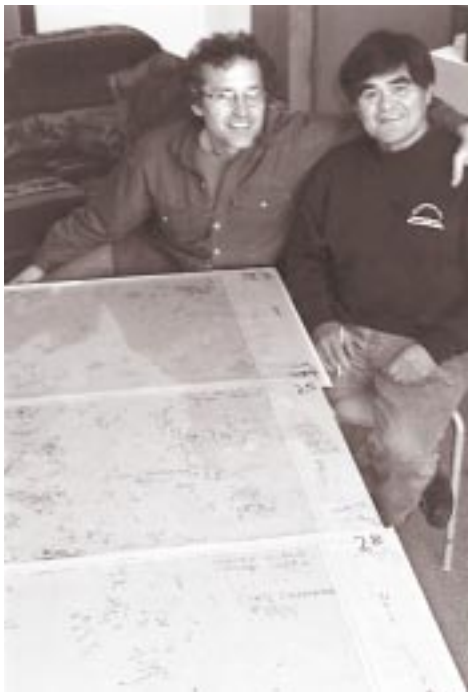
The most obvious result of giving insufficient thought to the measures of quality, principles, and parameters described in this book is that the research product is likely to fall short of the project's immediate objectives. There is a bigger picture to consider though. A community's experience, positive or negative, of its own land use and occupancy initiatives contributes to its culture of research. This is the group's collective understanding of research and its benefits, and people's willingness to contribute to an ongoing research program.

How receptive are community members to the announcement of yet another study or survey? Does it make people grumpy and elicit comments like "We've been studied to death," or "It'll never change anything," or "They've already asked me those kinds of questions before?" Do people respond with a sense of optimism and enthusiasm? Is there resistance to the idea, or openness?

It is critical to ask these kinds of questions while designing any particular piece of research because the answers are suggestive of the response burden likely to be encountered, and the participation that can be expected. It is also important that your government does what it can to encourage a culture of research that is favourable to future initiatives. The long-term research needs must be kept in mind, with the goal being that community members, when called upon, will be willing to support their government's call for information and knowledge.

The collective attitude towards a particular project is largely determined by people's experiences of previous research endeavours. There are things that can be done so that the overall experience of any particular land use and occupancy study will enhance the community's culture of research. Here is a short list.

- Honour the principle of informed consent – make sure that people have lots of information about the study prior to data collection, so that there is a groundswell of understanding out in the community, not just among the administration.
- Design the research carefully, and make sure that the project does not generate excessive response burden.
- Support your interviewers in every way you can, and recognize the difficulty of their task and the pivotal role they play.
- Follow through on any promises made to participants, such as a commitment to provide a personal copy of the session audiocassette, or a promise to notify them personally as to when and where the composites will be displayed.
- Hold a series of well-planned community verification meetings, and do everything you can to ensure they are well attended.
- Acknowledge the completion of the project with a celebration, and publicly thank all participants and the research team.
- Make sure that the final research products are accessible to all community members, and that everybody knows they exist.
- Keep people informed about the processes in which the research findings are being used, and the outcomes.



The author and Cyril Carpenter of the Heiltsuk Nation take a break during Cyril's map biography session. Creating a strong culture of research in your community is largely a matter of being thoughtful about the needs of participants. Every interview provides an opportunity to appreciate and respect another human being, and when approached in this manner, the work is very gratifying. When this is the case, community members are more likely to support their government's subsequent research projects.

Summary

The following are some recommendations that emerge from the discussion in this book.

1. If you are going to undertake land use and occupancy mapping, do it well. An inferior set of maps is unlikely to serve your community's interests. Be clear whether the priority is to use the data collection as an opportunity to produce maps that can help win long-term benefits, or to create short-term employment.
2. Develop a long-term strategic research plan and know where your land use and occupancy mapping fits into it. Make sure each research project builds on the strengths of previous ones, and pay attention to database compatibility. Any research component designed and undertaken in isolation from the others is likely to fall far short of its potential for concrete gains.
3. If you are going to use the data to identify territorial boundaries for purposes of land claims, consider whether it is in your best interest that the negotiations focus on maps based on occupancy data, in contrast to use data.
4. As part of your strategy, do your best to negotiate interim measures that give some protection to the kinds of features that your mapping project will cover, and to other categories of cultural features for which the project will not attempt to collect mapped data. Avoid the museum approach to mapping.

5 Find ways to maintain control of your map data to a level that meets your community's needs, and negotiate an information-sharing agreement that includes them.

6 Read the funding agency's instructional "how-to" materials with an eye to discovering all possible flexibility that can be used to your advantage. Avoid the invitations to fail that are often hidden in such guidelines, especially the invitation to design an overly-ambitious project that generates too much response burden.

7 Have the interviewers, transcribers, digitizers and other people doing each of the major mapping project tasks consult with each other on an ongoing basis and encourage their consultations to start as early as possible.

8 Budget realistically for all the mapping project tasks needed to obtain a quality research product. Avoid the mistaken assumption that data collection is the sole major expense.

9 Carefully define the project's basic parameters before you start data collection. It is all right to have multiple objectives as long as you have clearly identified one as primary. The study population, period covered by the mapping, study area, and interview guide are all defined with reference to that primary objective. Construct your interview guide carefully, keeping response burden in mind.

10 Refer to the principles of research design and data collection at every step of your mapping project.

- Respect participants in a heartfelt manner, at all times.
- Adopt official mechanisms that define what confidentiality looks like, in concrete terms, and follow through with honouring them.
- Make sure that potential participants have the information needed for them to offer informed consent, and that they can withdraw from the process at any time.
- Maintain a workable focus by being realistic about the number of themes you attempt to map in a single project, and by being selective in constructing the interview guide so the average session is not too long.
- Be flexible in the administration of the interview guide while also maintaining sufficient focus, "sufficient" being that which ensures the primary objective is finally met.
- Have all interviewers follow the same methodology in a highly consistent manner.
- Stay organized so that you can set up for interviews quickly, track raw data easily, and have the project notebook material you need to write a quality methodology report.

Elder Martin Smith of Pinehouse is shown skinning a mink on his trapline in northern Saskatchewan. For many aboriginal communities the mapping of the areas their members have trapped is important because trapping has been a key economic activity for many decades, and numerous other harvesting activities have been done in association with trapping. Fur-bearers continue to be an important source of both dollar income and edible meat for many First Nation families.

- If you are going to err in the recording of data, err on the side of caution.
- Design your current use and occupancy research to obtain as much self-reported data as possible, and in a way that lets you sort out which data were reported secondhand.
- Tape record the interviews and design other aspects of data collection and record-keeping in a way to ensure good integrity of data, which allows you to track the source of any particular datum.
- Train your interviewers to think in terms of data diamonds, which will give your maps historical depth, and provide concrete evidence of longtime use and occupancy.
- Have fun, and find ways to celebrate the process.

11 Keep the measures of data quality in mind at every step of your project.

- Ensure good reliability by carefully designing the methodology, administering it in a consistent manner, and providing a thorough written account.
- Ensure good validity by having interviewers be clear about the nature of the data that are being sought, by having a well-constructed interview guide that uses carefully selected definitions and key words, and by having data collectors who convey those definitions to participants and consistently use those key words.
- Define what level of accuracy and which data collection scale best suit your needs, and also how much verification of accuracy is needed, and when. Be realistic about the strengths and limitations of the various map scales for data collection purposes.
- Ensure good representativeness by making the criteria that determine who is a member of the study population consistent with the primary objective of the mapping project, and by achieving a high coverage rate.
- Help achieve your objectives by having composites that are of demonstrably high quality. Make them a positive factor in reconciliation processes, by generating understanding and consensus. Composites that are reliable, valid, accurate, and representative are not likely to be controversial.

12 Do whatever is necessary to inform your people about the project, address concerns about issues like confidentiality, and develop a consensus that the project is in the best interests of all families. Have this consensus in place before data collection starts.

13 Find a research director who has a track record of having worked with aboriginal communities on cultural research projects, having earned their trust, and having produced useful product.

14 Select your team of interviewers with attention to their commitment, interpersonal skills, community respect, sobriety, map reading, use of the indigenous language, ability to interview in a probing manner, familiarity with culture and harvesting systems, willingness to pay close attention to detail, and reading and writing skills.

15 Obtain the training your interviewers will need to do a good job at data collection.

16 Be prepared to provide your community interviewers with all the political, material, and moral support they need. Designate a staff member who has the skills and time to help with the problems that interviewers will face from time to time.

17 Make it as easy as possible for your interviewers to remain focused on data collection, the single most important task for the success of the research and the task they have been trained to do. Respect their limitations and do not invite failure by having them take on responsibilities unrelated to data collection.

18 Ensure that the project strengthens the community's culture of research by creating a groundswell of understanding about the study, designing it carefully and avoiding excessive response burden, actively supporting the interviewers, following through on promises to participants, holding well-planned verification meetings, celebrating project completion and thanking participants, making the research products accessible, and keeping people informed about how the research findings are used.

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In summary, implementing effective land use and occupancy research does not have to be the complicated and hit-and-miss process that has sometimes been the experience of First Nation communities. You can have a winner every time. The above recommendations will get you headed in the right direction, and if you do your best to be uncompromising on data quality, you will have maps that your elders and other members will be proud of.

And you will have maps that will help your government in its dealings with outside agencies and industry. This is a certainty. When competent leaders, negotiators and litigators have quality research in hand, the power balance at the negotiating table or court shifts in your favour. The take-home message of this guidebook is very simple. Settle only for good quality land use and occupancy maps. Your nation and your grandchildren deserve nothing less.

Implementing effective land use and occupancy research does not have to be a complicated and hit-and-miss process … you can have a winner every time.

Kids being kids, in Pinehouse, on the Churchill River in northern Saskatchewan. Doing a good job with your use and occupancy research is ultimately related to notions about the well-being of your children and their descendants. Whatever we do in life, and how we do it, is linked to the kind of world and the nature of the rights we want our children to inherit.

Glossary

Accuracy: A measure of the quality of *raw data* or *research product*. An accuracy measure indicates how precisely the location of a mapped *feature* is known.

Archival research: Research involving the types of records held at archives. An archive is a place where unique, original and unpublished materials (diaries, journals, photographs, maps, files, film and sound footage) are kept.

Baseline information or **baseline inventory:** A set of *use* and *occupancy data* used for comparison with other sets of *data*, and against which change over time can be measured.

Co-management: A negotiated arrangement where government or industry agree to jointly manage the resources of the territory with the First Nation.

Community consensus or **consensus:** A broad agreement among community members.

Composite map or **composite:** A map that combines and displays all *data* for a particular group of *interview guide* categories, from the *map biographies* of a specific group of participants. For example, the big game kill sites for all community members, or the plant gathering sites for women over 40 years of age.

Comprehensive research: A research strategy that links a number of key research projects together to produce data which prove that mapped land *use* and *occupancy* information represents living cultural systems, and that the *museum approach* to First Nations' cultural research is not valid.

Consistency: The doing of a given task the same way each time it is done.

Convention: An agreed-on way of doing each of the hundreds of little tasks that, together with the *parameters*, make up the research *methodology.*

Coverage rate: A statistic determined by dividing the number of participants (*participation*) by the number of people in the *study population*.

Culture of research: The community's collective experience and understanding of the benefits and risks of *use* and *occupancy* research, which largely determines community members' willingness to contribute to the kind of long-term research program necessary for self-government.

Current use and occupancy research: A kind of mapping study that documents each participant's *use* and *occupancy* of the territory any time within the participant's life, or *within living memory*. These kinds of studies record the direct life experiences of current generations, and generally go no farther back than 80 years.

Data: See *datum*.

Database: A collection of *data* organized according to a structure that describes the characteristics of the data and the relationships among them. A *GIS* database for instance, includes data about the location and characterisitcs of *features*.

Dataset: A collection of data that is organized around a common theme, like land *use* and *occupancy* for instance.

Datum: A single fact collected during an *interview.* The plural of datum is *data*.

Diamond or **data diamond:** The mental image to remind interviewers of the importance of obtaining four kinds of information (person, activity, location, time period) for each *feature* mapped during a *map biography interview*.

Digital or **digital data:** *Data* that are directly readable by a computer.

Digitizing: The process of converting *data* marked on a *map biography* into a *digital* form using a computer and *GIS* software. A map is digitized by taping it to a special electronic table, pointing at each feature marked on it with an attached "puck" (a device with a set of crosshairs), and pressing a button.

Feature: A *point* or *line* or *polygon* on a map that represents something in the real world like a moose harvest site or travel route or burial ground.

Geographical information systems (GIS): Computer software that deals with mapped information. GIS allow the map *data* to be captured, stored, checked, combined, manipulated, analyzed, displayed on screen, and printed out.

Global Positioning System (GPS): A satellite based navigational system that allows points on the earth's surface to be located with a high degree of *accuracy*.

Ground-truthing: Verification of the location and *accuracy* of sites mapped during *interviews* by going to the sites with the aid of maps and interview participants, and ideally also with a *global positioning system.*

Harvest survey: A key component of *comprehensive research* that provides quantitative measures of the amount of food that a community obtains from its territory over a defined period of time.

Historical use and occupancy research: A kind of study that uses a combination of oral history and written sources to document a community's *use* and *occupancy* of the territory. These kinds of studies record information that goes much farther back than the direct life experiences of current generations, usually hundreds of years.

Informed consent: The *principle* of *research design* and data collection that acknowledges that people have the right to know about the nature of the project, why the *data* are needed, and what the anticipated uses of them are, and that people have the right to agree to participate and to subsequently withdraw their participation.

Integrity of data or **data integrity:** The *principle* of research design and data collection that allows you to trace any *datum* found in the *research product* back to its original source among the *raw data*.

Interim measure: A negotiated temporary mechanism that gives all *use* and *occupancy* resources, both mapped and unmapped, some level of protection until such time as a management plan giving due consideration to the nation's entire system of cultural resources is in place.

Interview: A face to face social interaction that results in a transfer of *data* from a survey participant to the interviewer.

Interview guide: The list of questions that an interviewer uses to guide her or his questioning of the participant during an *interview*.

Key informant: A participant who verbally provides information to an interviewer during a research project which has a *study population* made up of a small number of only the most knowledgeable individuals.

Lines: Geographic *features* that have length but no area (e.g. political boundaries), or *polygon* features that are too narrow for their boundaries to be seen on a map of a given *scale*. See *points*, *polygons*.

Map biography: The map or set of maps resulting from a face to face interview during which the individual participant indicates the places he or she has used resources *within living memory*, and in some cases, places that have never been used or visited personally, but about which the participant has knowledge.

Methodology: The detailed account of how the *use* and *occupancy data* were collected, which includes a definition of each of the research *parameters* and a detailed description of the hundreds of research *conventions*.

Museum approach: Industry and government's typical interpretation of mapped First Nation cultural *features*, which is that they represent isolated remnants of a dead or dying tradition, instead of representing parts of living cultural systems.

Occupancy: Refers to the area which, as Dr. Peter Usher puts it, a "particular group regards as its own by virtue of continuing use, habitation, naming, knowledge, and control." The mapping of occupancy records stories and legends about places, ecological knowledge of places, indigenous place names, and habitation sites like cabins and burial grounds.

Operational planning: Land use planning that involves the use of large-scale maps, usually 1:20,000 *scale* which shows a lot of detail, to guide on-the-ground operations like logging and the construction of roads.

Parameters: The five basic big defining characteristics of the *research design* which have to do with why the research is undertaken, who is to be interviewed (*study population*), what time period data are to be collected for (*within living memory*), what geographic area data are to be collected for (*study area*), and what questions the participants are to be asked (*interview guide*).

Participation: The number of individuals from the *study population* that complete *map biography* interviews.

Points: Geographic *features* that have no area or length (e.g. mountain peaks), or features that are too small for their boundaries to be seen on a map of a given *scale*. See *lines*, *polygons*.

Polygons: Geographic *features* that cover a land or water area and are large enough to be seen on a map of a given *scale*. Polygons are defined by a *line* or lines that surround an area. See *points*, *lines*.

Population: See *Study population*.

Principle or **research principle:** A guideline that helps keep your research design and data collection on track and ensures that you end up with good quality *research product.*

Raw data: The many thousands of individual facts that are obtained during *interviews*, and that are recorded on study participants' *map biography* overlays or maps, and in their interview audio or videocassettes.

Reliability: The quality measure of the *raw data* or *research product* that addresses the question as to whether the same results could be reproduced if somebody else took the same *methodology* and repeated the mapping interviews following that methodology.

Representativeness: The quality measure of *research product* that addresses the question as to whether the map *data* truly represent the *study population* that the maps claim to represent, or in other words, whether the data provided by the participants are characteristic of the population to which the participants belong.

Research design: The strategic plan for a research project that sets out the outline and key features of data collection methodology and analysis, including a detailed consideration of the research *parameters*.

Research product: The concrete end result (such as *composite maps*, reports, and *databases*) of the research in which the *raw data* are organized, summarized and presented in a way that is useful.

Response burden: The study participant's experience of the interview as burdensome.

Scale: To show a portion of the earth's surface on a map, the area must be reduced. Map scale indicates the extent of this reduction. It is expressed as a ratio of distance on the map to distance on the ground. For instance, on a map with a scale of 1:50,000, one hand length on the map represents 50,000 hand lengths on the ground.

Social science: The study of society and social relationships.

Study area: The geographic area for which *use* and *occupancy* data are to be collected.

Study population: The individuals who are eligible to be interviewed.

Themes: The broad categories that are mapped during *use* and *occupancy* research, e.g. harvesting sites, critical animal habitat, site-specific features of special cultural significance, travel routes, and place names.

Transcription: The activity performed by people called transcribers which converts the content of the *interview* audio or videocassette into a transcript, which is a written or typed record of the *raw data* captured on tape.

Translation: The activity performed by people called translators which converts the content of interviews conducted in the indigenous language into French or English.

Triangulation: The process of obtaining a sense of the *accuracy* of a mapped *feature* by comparing where different participants indicated it on their individual *map biographies.*

Use: Refers to activities involving the harvest of traditional resources, things like hunting, trapping, fishing, gathering of medicinal plants and berry picking, and travelling to engage in these kinds of activities. The mapping of use records the locations where these activities occur.

Validity: The quality measure of the *raw data* or *research product* that addresses the question as to whether the data and information mean or signify what you claim they mean or signify.

Verbatim transcript: The typed record of an interview tape's raw data which captures, in exactly the same words, everything the participant and interviewer are heard to say.

Within living memory: The generally accepted time frame for most *use* and *occupancy* studies, which covers any time within the participant's life.

Word processor: Computer software that allows the creation, editing, formatting, and printing of text documents.

The take-home message of this guidebook is very simple. Settle only for good quality land use and occupancy maps.
Your nation and your grandchildren deserve nothing less.

This book is for leaders, administrators, and program personnel at the community or First Nation government level, as well as their consultants and external research people, and community researchers who have had experience with similar kinds of studies.

The information and ideas contained here should be especially useful to anyone who has the responsibilities of designing mapping projects and providing guidance to community interviewers.

"We adopted the approach that is outlined in this guidebook, and built an inventory of quality information about our historical uses of Tsleil-Waututh territory. The resulting maps and documentation are benefiting our negotiations for co-management of traditional lands, and helping us build the relationships and understanding required for the protection of our Aboriginal title and rights. Our land use maps are thus aiding in the survival and growing strength of our nation, and will benefit future generations."

Chief Leonard George

Leonard is Chief of the Tsleil-Waututh First Nation.

"A key aspect to documenting and substantiating our connection to our traditional territories is proper land use mapping. As an Aboriginal leader, I know that we need accurate and professionally developed maps to use in consultations, negotiations and possibly litigation, in order to protect our Aboriginal title and rights. I therefore encourage anyone interested in carrying out a cultural mapping project within an Aboriginal nation or community, to read this book. Whether we like it or not, the provincial and federal governments have more plans for our traditional territories and if we want to have a say, we need to establish the facts about our land use. Our own maps will be central to those discussions."

Chief Arthur Manuel

Arthur is Chief of the Neskonlith Indian Band, Chairman of the Shuswap Nation Tribal Council, Spokesperson for the Interior Alliance of Aboriginal Nations, and Co-Chair of the Assembly of First Nations Delgamuukw Implementation Strategic Committee.

"The Supreme Court of Canada, in *Delgamuukw*, said Aboriginal title must be established by evidence of physical and legal occupancy, or tenure. The principal way of establishing physical occupancy is to plot the First Nation's land use activities on a map. Therefore, it is important for nations and their advisors to know how to do this research and how to do it well. Terry Tobias' work provides sound guidance in this regard by an individual who is accomplished, credible and experienced in this field."

David Nahwegahbow, LL.B.

David is a Anishinabe lawyer practising Aboriginal law in Ottawa, and he is also President of the Indigenous Bar Association in Canada.

Union of BC Indian Chiefs

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