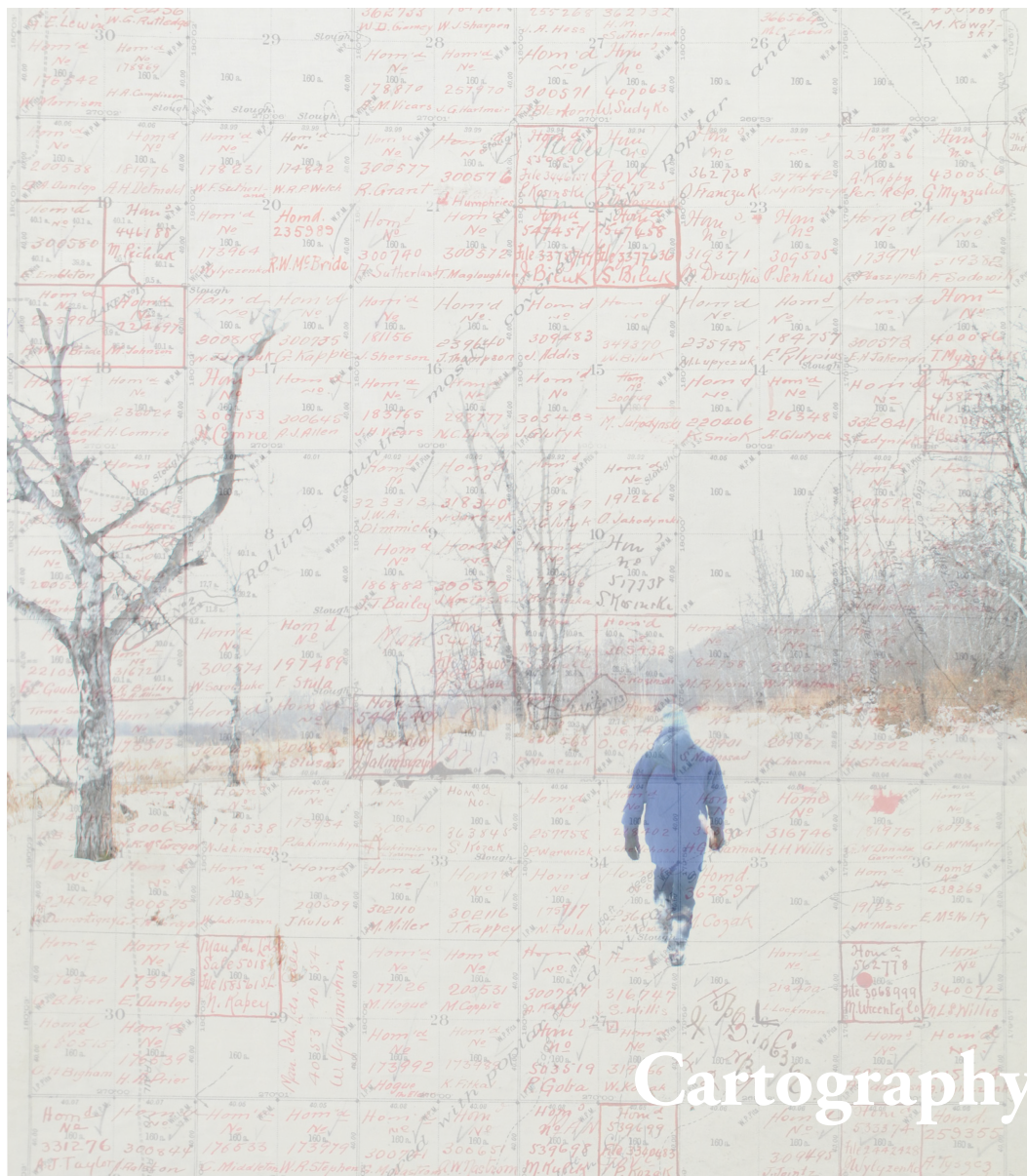




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Cartography of the Factual , Actual, and/or Imaginary

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A Practicum submitted to the Faculty of Graduate Studies of
The University of Manitoba
in partial fulfilment of the requirements of the degree of

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ABSTRACT

Amongst other complexities, landscape architecture is a discipline about understanding, expressing, and enhancing relationships between people and the land. This practicum focuses on revealing these relationships through cartographic concepts within self interpretation and interview, with a consciousness towards the biases that are embedded within mapped products. As maps are used on a daily basis in the discipline of landscape architecture, it should be considered a responsibility of the designer to have an understanding of the implications these tools possess. The Shell River Valley in Manitoba acted as a site of exploration with the intention of revealing human perceptions through cartographic methods of those who have relationships with the land.

*Figure i. At the top of the Shell River Valley,
Manitoba.*



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*Figure ii. At the base of the Shell River Valley,
Manitoba.*



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“You only know what you know.”

- Stella (Baba) Synnychych

These words should not be interpreted as an excuse for ignorance, but rather as encouragement to prevent ignorance. It is to make one aware that knowledge varies amongst individuals, and we must be humble in understanding that there is always more to learn. Being humble in this manner provides an openness to other perceptions.

PREFACE

determining topic

For as long as I can remember, I have had a strong interest in environmental conservation. This is likely to be a result of growing up in a family that supports these interests through similar passions, and having the benefit of learning about the environment through direct experiences with the land at my grandparents' farm. The farm is located in the Shell River Valley, composed of aspen forested hills and riparian areas of willow flanking the river and spreading through the oxbows. It is not the typical landscape one may think of when imagining the lay of the land that supports Manitoba agriculture. Across 640 acres of undulating topography, the ratio of open cultivated land to forested land is almost equal, supporting both agriculture and diverse habitat. Through interaction with this land, I have gained fundamental knowledge of how things grow, evolve and die; how they are connected to other elements in the landscape; and the relationships that occur between people and these elements. Perhaps the most important personal aspect gained has been the strong connection I have developed with the land due to the build up of experiences and memories with my family over 28 years. This connection aids my desire to protect this space and has contributed to my interest in landscape architecture and conservation.

The first formal writings of this practicum began four years ago with a focus towards the study of single resource dominated communities in rural Manitoba. Supporting interests were in settlement patterns based on resources, processes leading to resource depletion, and methods of landscape remediation. The question was, how could we design for better interaction between human extraction and the landscape extracted from?

A new set of interests arose after working for Parks Canada in Churchill, Manitoba when I; one, became captivated by the northern landscape (Figure 1); and two, was made aware of the proposal for the Manitoba Lowlands National Park in central Manitoba. To further my interests in the latter, I studied the park proposal in a course hosted by the University of Manitoba through the Natural Resources Institute as consideration for a practicum topic. Aside from learning about National Park policies and the unique landscape of the lowlands, I was particularly fascinated with the park boundaries. The conceptualized boundaries drawn upon maps of the area were revised several times since the original proposal for the park in the 1970s. These revisions of boundary placement were influenced by a continually revised understanding of species

migration and habitat occupation patterns. This led me to wonder, when will we ever know enough about ecological relationships to make informed decisions in conservation? When we protect one thing, are we harming another through the disruption of ecological balance?

Torn between two options of study; single resource communities and the Manitoba Lowlands National Park proposal, I took a trip in June 2011 to explore these sites in central and northern Manitoba. The sites visited in relation to resource communities included Grand Rapids, Gillam (Figure 2), Wabowden (Figure 3), Thompson (Figure 4), Snow Lake, and Flin Flon (Figure 5). The sites visited in relation to the park proposal and surrounding area included Long Point on Lake Winnipeg (Figure 6), Cedar Lake (Figure 7), the area along Provincial Trunk Highway #6 (Figure 8), and Little Limestone Lake (Figure 9). Speaking with the people in the communities and the workers at the mines and hydro sites was invaluable. Prior to leaving, I was loaded with questions relating to environmental concerns. Returning, I gained an understanding of the good in people and the generally good intentions they have towards the land.

Figure 1. Sunset over Hudson Bay, just outside the Town of Churchill, Manitoba.





Figure 2. Limestone Generating Station near Gillam, Manitoba.



Figure 3. 500 metres underground in Crowflight Minerals Inc Bucko Lake Nickle Mine in Wabowden, Manitoba.



Figure 4. Vale Thompson Mine stack and tailings, Thompson, Manitoba.



Figure 5. Hudbay Mine with remediated ridge, Flin Flon, Manitoba.



Figure 6. Fishing shacks on Lake Winnipeg off of Long Point, Manitoba.



Figure 7. Elevated water during the 2011 spring flood at Cedar Lake, Manitoba.



Figure 8. Provincial Trunk Highway #6, north of Grand Rapids, Manitoba.



Figure 9. Little Limestone Lake Provincial Park, Manitoba.

PREFACE

(cont.)

Although all the areas visited on the trip offered countless topics for study, the Manitoba Lowlands National Park proposal was ultimately chosen to support my interest in the National Park System of Canada. I was fortunate to meet with a representative from Parks Canada to better understand how my practicum may be focused towards the design of the proposed park. He was unable to tell me the state of the park proposal as it was a confidential matter between Parks Canada and the communities in the lowlands. We agreed that a practicum focusing on park design may create confusion in the community since the proposal for the park had not yet been approved. The more pressing matter was one of negotiation. This realization of the importance of negotiation and understanding of human perception shifted my interest from park design to the way we communicate with one another and express what we find of value, specifically with respect to the land.

From this point on, many considerations were made for the study of 'things' in/of the landscape rather than a specific site. Emotion, photography, representation, colour, light, birds ... just birds, boundaries, and so many other 'things' relating to landscape. After a couple of months

struggling with the idea of studying elements in isolation from a site, I decided a site was necessary even though my intentions remained devoid of specific site design. I proposed to study three areas to compare and contrast conservation methods based on scale and ownership: my family's farm in the Shell River Valley, the Town of Churchill and surrounding area, and the Manitoba Lowlands. How could the regional study of three very different sites inform conservation strategies of each other? How do human values vary at different scales?

With the desire to understand what people value in the landscape and how they communicate these values for integration in spatial design decisions, methods of cartography seemed to be an obvious point of study. I was immediately attracted to the way cartography was discussed in literature. I had expected to encounter a strict scientific structure, but instead was greeted with eloquent language that perfectly blended quantitative with qualitative thoughts, both of which are present in every map even if we are made to believe otherwise. The literature provided a new-found understanding of how the subtleties within a map can influence our perceptions of the mapped elements. The more I became aware of thoughtful cartographic

techniques through historical studies, the more I began to question my own relationships with mapping, whether hand drawn or computer generated. A simple choice of line width or colour can change the way a reader of a map understands the space depicted. If maps affect the way we understand space, we should be conscious of how maps are designed.

Realizing that cartography was not only about plotting points and polygons, but that it was embedded with perceptions and biases of both the map maker and the map reader, I began to understand the value it offers to landscape architecture. Landscape architecture addresses how people relate to and use the land, and cartography can be used to reveal perceptions and biases in order to understand these relationships. These understandings can then be taken into consideration for the support of design decisions. Excited about this realization, I was finally ready to commit to an idea and a site. To focus on cartographic concepts to reveal human perceptions of the land, a familiar site of study was chosen; the Shell River Valley surrounding my family's farm (Figure 10).

Figure 10. The undulating topography of the Shell River Valley.



TOPICS	DATE	MAIN THOUGHTS
First visit to the farm.	1985	I was too young to remember.
I squished a centipede.	1995	A distinct memory of feeling guilt for harming a small creature.
I want to be a Park Ranger.	1999	I want to protect the land from people (an innocent yet naïve thought).
I want to be a Landscape Architect.	2001	A combination of love for nature and a new found love for design.
Humans and the city are part of nature.	2008	<i>A Granite Garden</i> by Anne Spirn made me realize people are part of nature and that environmental protection should involve human inclusion, not exclusion.
Appreciation of what already exists.	2009	A studio in Thunder Bay revealed a personal desire in design to expose the beauty that already exists. Appreciation of the aspects of every day life.
Regional scale.	2009	I began to understand the importance of study on a regional scale to understand environmental systems and larger interactions.
Interest in single resource towns.	2009	Prior to entering the Master of Landscape Architecture program, I proposed to study settlement patterns in single resource towns in Manitoba. I developed an interest in rural communities.
Churchill, Manitoba.	July 2009	I worked for Parks Canada in Churchill. I became captivated with the town and was made aware of the proposed Manitoba Lowlands National Park.
Comparative photography.	January 2010	During an academic study of Banff National Park, I read <i>The Lens of Time</i> by Cliff White and E.J. Hart and became fascinated by the amount of information that can be conveyed through comparative photography. The book presented examples of how protection can sometimes produce negative adverse affects.
Random Thesis Notes.	November 2010	I began a text document titled “Random Thesis Notes” to track my thoughts.
Group painting.	December 2010	I designed a collaborative method of painting where I requested family and friends to contribute a single painted line to a canvas. The result was a precious expression representing individuality of those involved in the project.
Manitoba Lowlands National Park proposal.	January 2011	In an elective hosted by the Natural Resources Institute at the University of Manitoba, I chose to study the proposal for the Manitoba Lowlands National Park as consideration as a practicum topic.
Understanding the farm within the region.	February 2011	I followed the Shell River Valley through Google Maps, and discovered for the first time where the Shell River begins and ends. Prior to this, I had imagined our family's farm in the valley as an isolated construct.
Shifting boundaries.	March 2011	I became fascinated with the shifting boundaries of the proposed Manitoba Lowlands National Park. As more information was gained on caribou habitat, the proposed boundaries shifted to protect those areas.
The inclusion of people.	May 2011	I realized that all design is for people. Even if I am designing to restore habitat and have direct intentions to assist certain species or ecosystems, I am designing to fulfill my own desires. All designs should consider the presence of people. The exclusion principle is often unsuccessful in conservation.

TOPICS	DATE	MAIN THOUGHTS
The good in people.	June 2011	Trying to determine whether I would study single resource towns or the proposal for the Manitoba Lowlands National Park as a practicum topic, I took a road trip to visit the intended areas of inquiry. Prior to leaving, I was loaded with questions relating to environmental concerns. Returning, I gained an understanding of the good in people and the generally good intentions they have towards the landscape.
Tourism and National Parks.	September 2011	I proposed to study National Parks in Manitoba. What do people feel most connected to in the landscape and how does this connect to tourism? How can the design of parks balance an influx of people and ecological integrity?
A design for the MB Lowlands is not needed.	November 2011	I was fortunate to meet with a Parks Canada representative to discuss the Manitoba Lowlands National Park proposal. He was unable to tell me the state of the project out of respect for the community in the lowlands. As I understood this to be a sensitive subject, we agreed that a design proposal may create confusion since the proposal for the park had not yet been approved. This piqued my interest in negotiation between people.
Emotion in the landscape.	November 2011	How is excitement and emotion generated in the landscape? How can we be explorers in familiar landscapes? How can we utilize imagination in the landscape to create a personal connection to the land?
Photography.	November 2011	Aerial vs grounded. How does this change our understanding of the land?
Elements in the landscape.	November 2011	Can I just study elements in the landscape: light, colour, precipitation, birds?
A site.	November 2011	As we are taught in the Faculty to design for/from a site, I was feeling lost without a specific site to study.
<i>The Country and the City</i> by Williams, 1973.	November 2011	The reading provided a realization of my romanticized perspective of the farm.
A comparative study of three sites.	November 2011	I am going to study three sites of different scale in relation to conservation: proposed Manitoba Lowlands National Park, Churchill, MB, and the farm.
Research affects design outcomes.	November 2011	We should be aware that what and how we research affects design outcomes.
Cartography.	December 2011	How do we approach and represent site through cartography and how does this relate to the design and support of conservation projects?
Human perception of the land.	April 2012	How can we better understand human perception to understand attachment to and resulting possession of the land? Through cartography?
Intermediate Presentation.	May 2012	Factual, actual, and/or imaginary.
Human perception in maps.	June 2012	In a study of the history of cartography, is it possible to understand human perception at the time of map creation?
A focus on one site: The Shell River Valley.	October 2012	A new-found understanding of my own perceptions of the familiar settings of our family's farm produced a desire to understand the perceptions of other people living in the Shell River Valley.

INTRODUCTION

“The initial problem is one of perspective.” This is the opening line of the second chapter in *The Country and the City* by Raymond Williams, 1973. The idea supported by this quote has been considered throughout this practicum in the search for topic, research, design, and compilation of what follows. It is not to suggest that individual perspectives are flawed, but rather to make apparent that no matter what the topic, there will always be a range of perspectives that exist. With this understanding, one can be more open to and perceptive of other perspectives than one's own.

In the discipline and profession of landscape architecture, cartography is utilized from design conception to completion as a method of analysis, process and communication. It is common for designers to involve clients, users of a site, or surrounding community in the design process to compile a record of existing or past site conditions as well as desires to be considered in the proposed design. Various methods of spatial mapping are often used to keep track of this record as the information can then be overlaid onto other spatial data sets for purposes of comparative analysis. This practicum builds upon the existing desire in the discipline of landscape architecture to gain information directly from people,

with an additional lens of cartographic concepts that can aid the designer in revealing how people perceive the land to be. In addition to the creativity of the designer, designs are based off of information. The quality of this information as well as the way one interprets the information will affect the designed outcome. How can mapping assist designers to better understand their own perceptions and client perceptions of the land so as to aid the understanding of site? How do the biases present in maps influence this understanding? How do these understandings influence the designed outcome?

Three main topics will be discussed, all with the intention of exploring how human perceptions in relation to the land may be understood and revealed through cartography; **ONE**, based on the discussion of select examples of existing maps and cartographic materials, this practicum explores how cartography has been used to record, understand and alter human perceptions and suggests how conscious production and reflection of cartography can assist site comprehension; **TWO**, this practicum explores how the designer may become familiar with a site through questioning their own relationships with it, specifically utilizing methods of cartography through photography

to reveal familiar and unfamiliar aspects of site; and **THREE**, this practicum explores the use of cartographic methods in individual interviews to reveal perceptions and ways of understanding the land by others.

The Shell River Valley in Manitoba was chosen as a site of exploration, not for the production of a site design, but as an area to experiment with cartographic methods to reveal human perceptions of and relationships to the land. Valuable for both agrarian production and diverse habitat, this landscape offers a unique range of human perceptions linked to the land, ranging from very intimate yet laborious relations of those who farm the land, to the detached yet romantic perception of those who visit the scenic valley.

The valley hosts my family's farm located north of Roblin, Manitoba marked on Figure 11 as *Beattie Farm*. The Shell River flows from its headwaters in the Duck Mountains, through the *Beattie Farm*, into Lake of the Prairies (Figure 12), and then empties into the Assiniboine River via the Shell Mouth Dam (Figure 13). The place name comes from the Cree word *Asessippi*: *Êsa* meaning Shell, and *Sîpîy* meaning River.

Figure 11. The course of the Shell River.

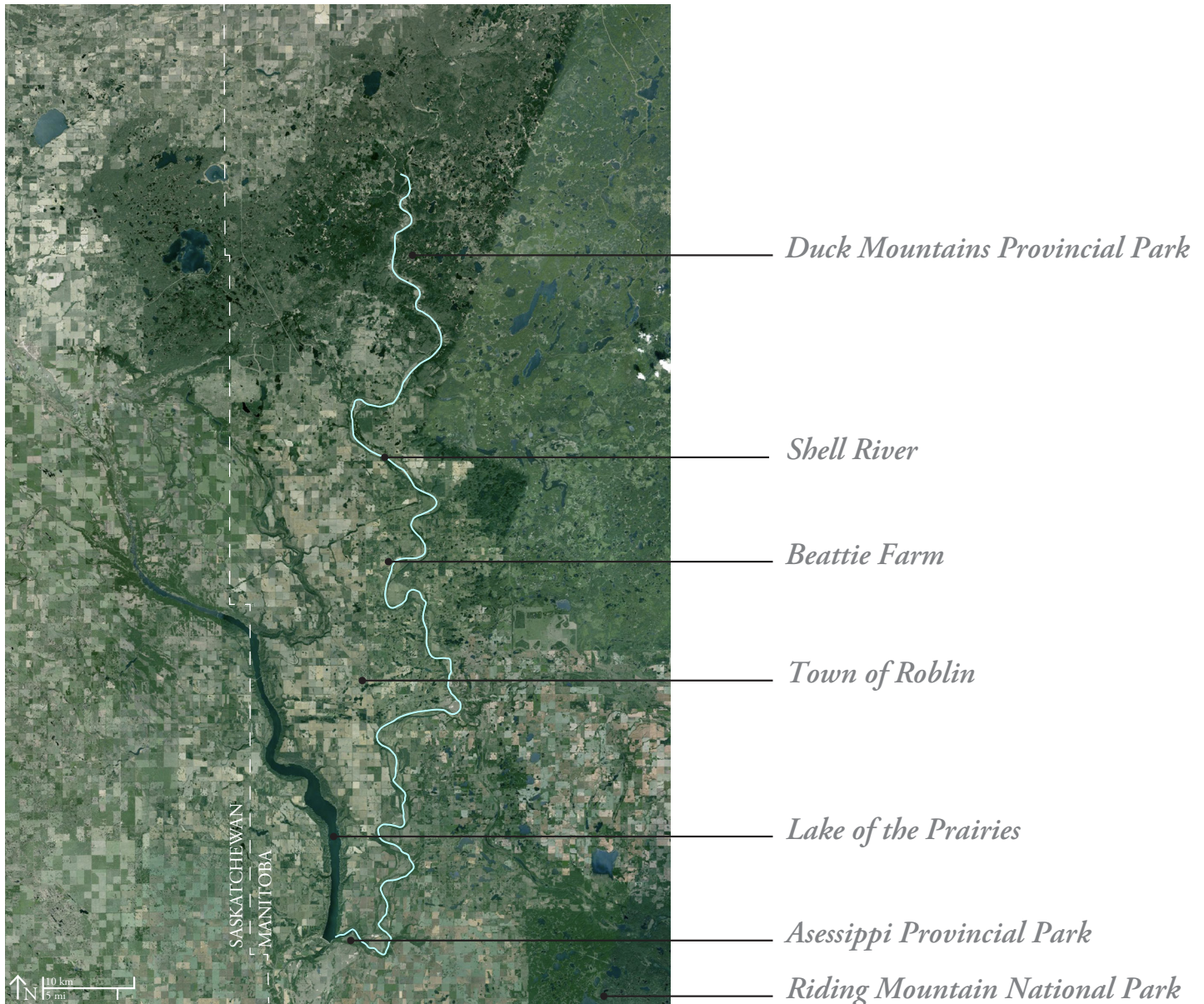




Figure 12. Mouth of the Shell River at Lake of the Prairies, Manitoba.



Figure 13. The Assiniboine River at the Shell Mouth Dam, Manitoba.

INTRODUCTION

(cont.)

Landscape architectural projects often involve many parties with varying agendas and opinions. To move forward in the design process, a common ground is often sought, while attempting to maintain a delicate balance acknowledging individual values. Cartography can be used as a vehicle to reveal the perceptions of people involved in the project, whether it be the design team or those that will use the design after completion. Doing so has the potential to reduce assumptions while at the same time reveal ideas that can then be considered in design decisions. If utilized to understand human perceptions at the beginning phases of a project, it can expose issues to be discussed amongst those with other opinions sooner rather than later. This method of understanding through cartography does not offer set solutions for coming to an agreement amongst several parties, but it can act as a prelude to the design process.

A single line on a page has the power to change the way a site is perceived, and how a site is perceived affects attitudes towards the land. These attitudes have an affect on the designed outcome. It is therefore important to seek out other perceptions than one's own and be mindful and conscious of how we progress through design in relation to cartography.

A note about conservation

The concept of environmental conservation is present throughout this practicum, although there is no set discussion revolving around the subject. Instead, it is inherently embedded within the ideas relating to individual perceptions, passions, and connections between the people and the land. There are several areas within the Shell River Valley of which land is conserved under established conservation programs. This includes a recent conservation easement that was established on parts of my grandparents' farm through the Nature Conservancy of Canada (Figure 14). Prior to this study I had thought this was the only way to conserve habitat and health of the land. Although I still value and support these efforts, I have learned through interviews conducted with people who have relationships to the land (presented in Chapter 3) that conservation within the valley is also present though the passions developed by individual land owners towards the land they live with and depend on. This intimate connection and respect for the land produces a desire for protection and is perhaps the strongest type of conservation one could hope for. However, it is intrinsically linked to the land owner and may only last for the length of time they occupy the land.

Figure 14. Portion of Conservation Easement lands in the Shell River Valley.



DEFINITIONS + ETYMOLOGY

DEFINITION

"Cartography is the discipline dealing with the art, science and technology of making and using maps" (International Cartographic Association).

ETYMOLOGY

"1843, from French cartographie, from Medieval Latin carta "card" + French -graphie, from Greek -graphein "to write, to draw"' (Online Etymology Dictionary).

Cartography was "coined by Manuel Francisco de Barros e Sousa, Viscount of Santarem, in the mid-nineteenth century in particular reference to the study of early maps" (Harley & Woodward).

Map

DEFINITION

"Maps are graphic representations that facilitate a spatial understanding of things, concepts, conditions, processes, or events in the human world" (Harley & Woodward).

"The word 'mapping' is often used in conjunction with cartography, but is different in the fact that Mapping is 'the mental interpretation of the world' (Dorling and Fairbairn, 1997, p.3). That is how we perceive the world around us and interpret it spatially, often into a mapped form" (The British Cartographic Society).

"A diagram or collection of data showing the spatial distribution of something or the relative positions of its components" (Oxford English Dictionary).

"A map is a symbolized representation of geographical reality, representing selected features or characteristics, resulting from the creative effort of its author's execution of choices, and is designed for use when spatial relationships are of primary relevance" (International Cartographic Association (ICA)).

ETYMOLOGY

"1520s, shortening of Middle English mapemounde "map of the world" (late 14c.), and in part from Middle French mappe, shortening of Old French mapemonde, both English and French words from Medieval Latin mappa mundi "map of the world;" first element from Latin mappa "napkin, cloth" (on which maps were drawn), + Latin mundi "of the world," from mundus "universe, world" (see mundane). Commonly used 17c. in a figurative sense of "epitome; detailed representation." To put (something) on the map "bring it to wide attention" is from 1913" (Online Etymology Dictionary).

Perception

DEFINITION

"The process of becoming aware or conscious of a thing or things in general; the state of being aware; consciousness" (Oxford English Dictionary).

ETYMOLOGY

"Classical Latin perceptiō-, perceptiō action of receiving, collecting, action of taking possession, apprehension with the mind or senses. French perception action by which a subject takes note of objects through the senses (1611 in Cotgrave in this sense)" (Oxford English Dictionary).

"Meaning "intuitive or direct recognition of some innate quality" is from 1827" (Online Etymology Dictionary).

INTERPRETATION OF DEFINITIONS

The preceding definitions represent a cross section of the terms cartography, map and perception, and will act as the foundation of understanding for this practicum.

The word '*spatial*' is common within all chosen definitions for the word '*map*'. The definition from the ICA focuses on the term '*geographical reality*' whereas the other three definitions do not confine the study to geographical components and suggest an acceptance of other types of constructs that could include maps of cognitive thought that may not be geographically bound. This practicum will consult the first three definitions for their flexibility in terms of mapping with human perception.

'Action of taking possession' is included in the etymology of the word '*perception*'. Possessive qualities are often embedded in human perceptions. The study of cartography has brought this to light, and discussion of how mapping may be able to release some of our possessive natures will be included throughout this practicum.

The term '*innate quality*' within the meaning of '*perception*' makes it apparent that sometimes we must seek to perceive. It is not always on the surface but embedded in character.

FACTUAL, ACTUAL, AND/OR IMAGINARY

Factual, Actual, and/or Imaginary. These three words act as a frame of reference to question and understand how maps influence our perceptions. All maps will relate in varying degrees to one, two, or all three of these words. Awareness of how perceptions are shaped by these words through cartography can make one ask questions of maps rather than simply reading and accepting them.

The following two quotes represent the powerful nature of maps in relation to factual, actual, and/or imaginary.

“Maps sit on the edge between myth and reality, and we’re taught they are an actual representation and certainly most map-makers try to make them a legitimate representation” (Morantz, 2002, p. 154).

“Typically perceived as cut-and-dried representations of reality, Baudrillard argued, maps actually generate reality themselves. The territory no longer precedes the maps, nor survives it...it is the map that precedes the territory” (Morantz, 2002, p. 147).

Factual, actual, and/or imaginary concepts in cartography should be considered for the influence they have on the perceptions of the map maker and the map reader. For example, in cartographic constructs today, the

accuracy of a computer-generated line portrays a convincing reality and exactness. If the map reader interprets that line to be ‘actual’, their perception of what the map is representing may be distorted.

The **factual** in cartography supports our desire to record quantitative data. Our desire to understand ‘the facts’ has progressed technologies to achieve this goal. Geographic Information Systems (GIS) are of the most common and influential cartographic technologies of today. These systems support factual data within the structure of the program itself. However, these types of maps may quickly become outdated depending on the type of facts and the importance placed on accuracy as ‘factual’ data is always shifting. The ‘factual’ is often sought in a desire to represent the ‘actual’.

The **actual** in cartography does not exist as all maps are representations, but we often believe maps to be actual, and so it has influence on our perceptions of space depicted by a map. In addition to the complexity of physical elements in the world, the constant progression of time adds greater difficulty in grasping the actual. If the actual exists at all, then it may be found in perception itself; the way each individual imagines the actual to be at any moment in time.

The **imaginary** in cartography is arguably present in every map. Elements inferred from what we experience to be actual are transformed and filtered in one’s mind. We ignore certain elements and highlight others depending on our sensitivity to, and understanding of, varying subjects. If the way we imagine the land affects our relationship with it, then imaginary thoughts may be more actual than anything.

A single map may shift between these three terms if the external world changes perceptions of the mapped elements. For example, a map may be believed to be factual during map production. At a later date the facts represented may be proven untrue. The factual map then becomes more imaginary, based on the viewers new-found understanding of what the map represents. Therefore, the original intended purpose of the map may shift drastically as the map ages.

An understanding of what the map maker and map reader believe to be factual, actual, and/or imaginary, and how this perception may shift over time, can be revealing in terms of human perception. Varying understandings between people regarding the truthfulness of maps may affect perception of what the maps represent.

Factual

DEFINITION

“Pertaining to or concerned with facts; of the nature of fact, actual, real” (Oxford English Dictionary).

Actual

DEFINITION

“Existing in fact, real; carried out, acted in reality. Opposed to potential, possible, ideal, etc. In operation or existence at the time; present, current” (Oxford English Dictionary).

Imaginary

DEFINITION

“Existing only in imagination or fancy; having no real existence; not real or actual. Also of a line, circle, etc.: that is assumed or inferred as passing through or between certain points, but which otherwise has no real existence” (Oxford English Dictionary).

INTERPRETATION OF DEFINITIONS

Within the above definitions, *‘factual’* and *‘actual’* are found within each others’ definition. However, *‘actual’* relates more to actions and suggests a temporal notion.

The term *‘real’* is in every definition, with *‘factual’* and *‘actual’* suggesting reality, while *‘imaginary’* is defined as *‘not real’*. *‘Imaginary’* seems to be the exact opposite from *‘factual’* and *‘actual’* in terms of what is perceived as reality.

“Our ability to understand ourselves as human beings is limited, in many ways by the ever-present feeling that much of how we behave and how we think is obvious, that these are things that everybody “knows.” We hamstring ourselves with the disparaging remark that something is trivially obvious. For this reason, we have learned to ignore very many ideas that are both fascinating and important.”

- Downs & Stea, *Maps in Minds*, 1977, p. xiii

*Figure 15. Mapping memories within the Shell
River Valley, December 2012.*



OBJECTIVES + METHODOLOGY

arranged by chapter

ONE.

Objectives:

- 1) To understand cartographic concepts and how these influence our understanding of the land.
- 2) To present the importance of conscious production and reflection of cartography.

Methodology:

Experts in the subject of cartography will be consulted through textual sources. Select examples of cartography will be studied to present cartographic decisions that may change the way one perceives a map.

Limitations:

There will inevitably be limitations on the amount of cartographic study that can be addressed in this practicum. Although the world is rich with cartographic examples, this practicum focuses on western and european maps.

TWO.

Objectives:

- 1) To understand how my own biases influence my perceptions and relationships to the land.
- 2) To understand a site through contrasting the familiar and unfamiliar.

Methodology:

Exploratory methods of photography will act as a way to contrast thoughts about a very familiar place against a measured datum. This will help to reveal unfamiliar aspects of a site to understand perceptions of the land.

The methods include:

- 1) Framed photography.
- 2) Comparative photography.
- 3) Section Photography.
- 4) Following the survey through photography.

Our initial understandings and backgrounds, what we choose to study, and how we represent these elements will have influence on design.

Limitations:

It is possible I may not be able to perceive and identify all of my biases.

THREE.

Objectives:

- 1) To understand how different forms of mapping may represent and reveal cognitive perceptions of others.

Methodology:

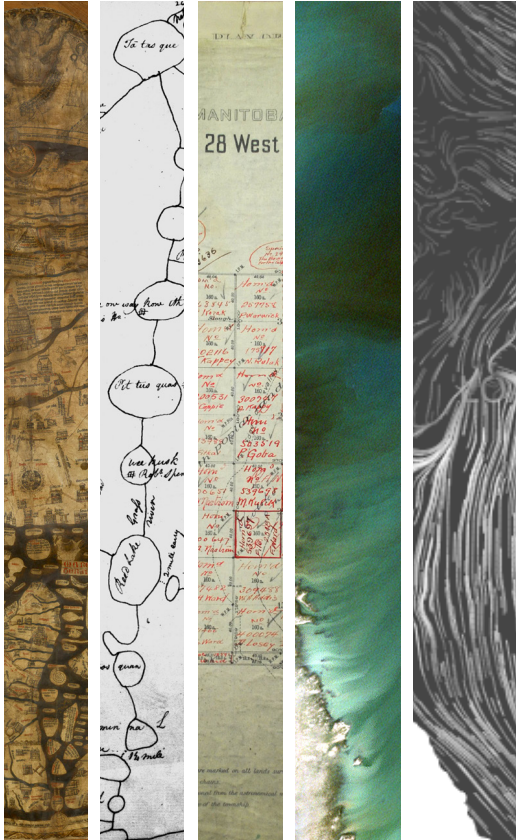
Qualitative research will be utilized through interviews to understand human perception of the Shell River Valley, through:

- 1) Photography
- 2) Cognitive mapping
- 3) Mapping location
- 4) Conversation
- 5) Memory maps (Figure 15)

Limitations:

The author has sought to understand the perceptions expressed by the individuals involved in the interviews, although it should be noted that it is impossible to fully understand another person's perspective.

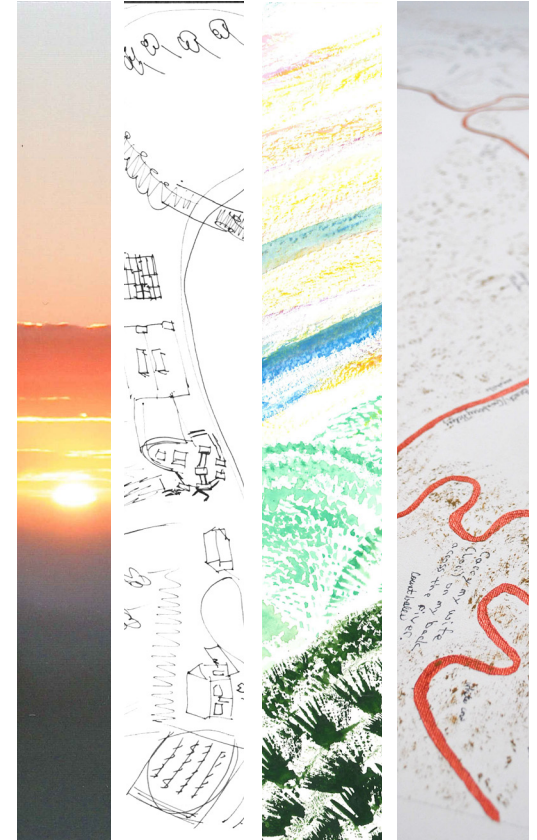
There was a range of cartographic knowledge present amongst individuals involved in the study. This varying range had an effect on the way individuals mapped or the way they understood maps.



ONE.



TWO.



THREE.

ONE.

*Concepts of Cartography
-understanding embedded and resulting perceptions*

THREE INFLUENTIAL MAPS

1.0

Cartography, defined as the science or art of making maps, influences our understanding of everyday relationships between and with the represented mapped elements. The study concentrates on spatial relationships as recorded from a geographic or cognitive perspective, which includes such famous productions as the map of the world that is present in nearly every human mindset. In the 21st century, maps have become everyday phenomena that guide us through our days, often without a recognition of the valuable purposes they serve. They may be used as wayfinding devices or valued as art, bought at a gas station or at an antique auction, created to claim territory or to entice tourists to visit certain places, and countless other applications. As maps are so frequently consulted, they are often taken for granted. The amount of research, production, distribution, technology, passed-down knowledge, and design that goes into the creation of a single map often goes unnoticed. Even more so, the way maps affect how we understand the elements they represent is rarely thought of in everyday map usage. Subtle shifts in understanding may occur in one's mind while absorbing cartographic information, leading to new perceptions of the represented features. What we gain from this has an impact on our comprehension of

our everyday environment, which subconsciously assists in our attitudes and values towards the land.

"A good map ... suppresses truth to help the user see what needs to be seen ... A map that did not generalize would be useless" (Monmonier, 1996, p. 25). This quote from *How to Lie With Maps* makes it clear that maps are selective representations that simplify information for the purposes of communication. They are valuable constructs that cost money to produce. This is a significant factor in the contemporary shift from hand drawn to computer generated cartographic productions. Chapter One will present select cartographic productions and concepts that are valuable in understanding the influence maps have on human perceptions of the land. The topics follow a generalized time line from earliest to most current, except for the topic of cognitive mapping, which could be seen as part of all types of maps from all times.

Three types of maps were particularly influential to the initial understanding of cartography and perceptions that supported this practicum; mappa mundi (cloth of the world), portolan charts, and maps for war.

The Hereford Mappa Mundi (Figure 16) was created in 1300. It represents

medieval times, with east at the top and Jerusalem and the Mediterranean Sea at the centre. The town of Hereford where the map now resides is drawn near the bottom left of the map. At the time of creation, it was thought to represent the whole surface of the globe (Andrews, 2009, p. 10). The map was produced by a Christian Monastery and is specifically credited to 'Richard of Haldingham or Lafford' (Hereford Cathedral, 2009). The map is a combination of text and images of the known and imaginary world. Typical cartographic elements of measure do not appear on this map. Although as a representation of the world it may seem quite imaginary today, this map as a whole expresses a type of character which makes one able to imagine how life may have been in 1300, prior to an understanding of geographic relationships around the world.

Portolan charts (maps of the water and shores used for navigation) often express a mix of factual and imaginary information. Unlike those travelling on land, navigation on the ocean required maps due to the unknown conditions, long travel times, and lack of land features to aid navigation (Andrews, 2009, p. 260). Although the introduction of the compass aided certainty of location making waters much safer to navigate,

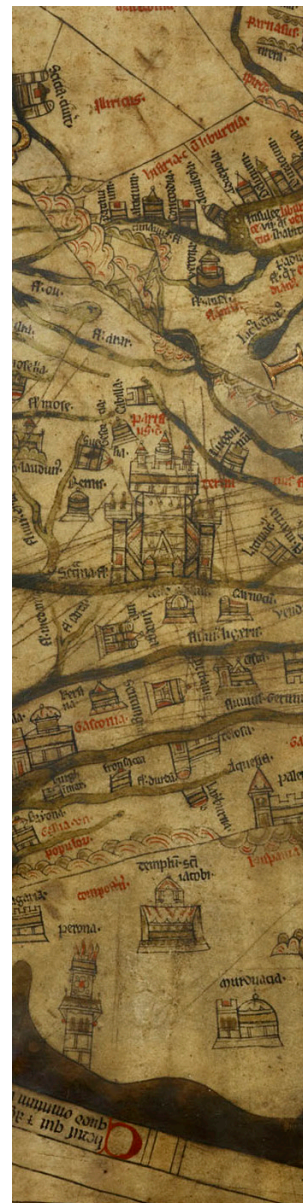
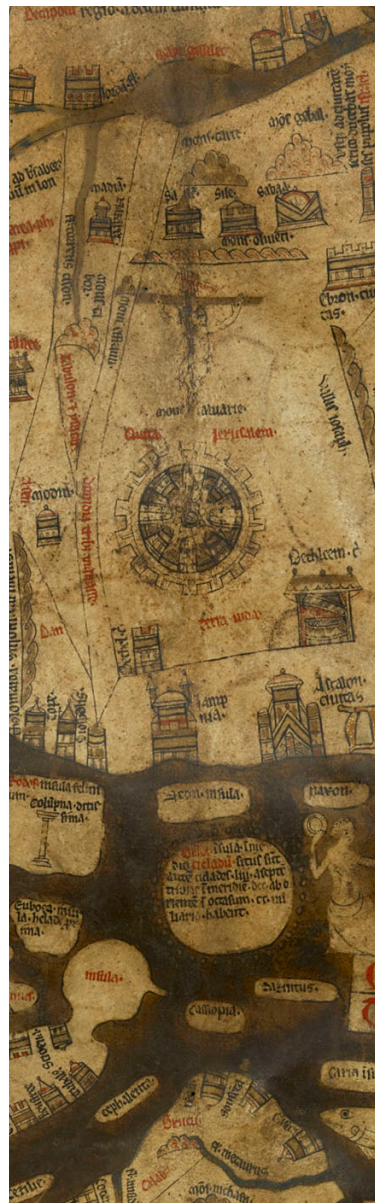
there was still fear of the unknown territory. This is apparent in many portolan charts as imaginary and often terrifying sea creatures are drawn on the map, which seem to express the collective perception at the time of the uncertainty of the water.

The production of maps for the purposes of war provides one of the most blatant examples of the manipulation of maps for specific purpose. It was common during times of war for main political entities, such as cities, to be indicated on a map offset from their actual location. This purposeful falsification of geographic location was meant to set the enemy off course and delay or prevent attack. In this case, the deliberate distortion of the map acted as an aid for protection from enemies.

These three examples provide an understanding of how the way a map is drawn can influence how we understand the represented spaces. Slight shifts in understanding while reading a map can change our perceptions of the depicted space, which is why maps should be questioned rather than simply read.

*Figure 16 (see pages 19 and 20 for map details).
Hereford Mappa Mundi: 13th c., Calf Skin,
1.65m x 1.35m. Copyright of the Hereford Mappa
Mundi Trust and the Dean and Chapter of
Hereford Cathedral. Reprinted with permission.*





ORIENTATION + PROJECTION

1.1

Locating north upwards on a map is a common cartographic technique. This orientation aids a quick comprehension of direction, whether to understand sun angles, to understand position for navigation, or to understand where other elements may be in relation to the mapped land. This convention is ingrained within a large majority of maps, although there are exceptions in history that provide fascinating examples when north is not associated with 'up'. The way we orientate a map reflects the way we relate our position in space to the land, and therefore is important to understand for a comprehension of perception.

Pierre Desceliers' World Map or 'planisphere' was created in 1550. Although it is a map of the oceans and shores, it was not designed for navigation but more so as a work of art for royalty. It hosts a unique orientation as it was designed to accommodate the views of those sitting around a table (Figure 17). The text and images of the map are drawn with one orientation on one half, and the opposite on the other. When looking at the map from either side, half will always be right-side-up, and the other half will be upside-down (British Broadcasting Corporation, 2010). The content of the map is similar to the Hereford Mappa Mundi

as it consists of a collection of known and unknown entities (British Library, 2009). Those areas that were unknown are depicted with mythical elements. This represents the map makers bias towards what they believe to be true rather than factual.

The Icelandic orientation system relates to historic land travel by horseback. The mountainous landscape of the Icelandic interior makes travel most efficient via the exterior coastlines. To aid direction while travelling the meandering coast, Iceland was divided into four sections; north, south, east, and west, all connected by a coastal trail. Travel direction was described based on the destination section. For example, travelling west meant going to the western section, although if your journey began in the south, you would actually be travelling north in terms of compass direction. In this case, orientation is based on language, dictated by travel and landscape (Downs & Stea, 1977).

Direction may also be understood in terms of landscape features such as a river, whether upriver, down river, towards the river, or away from the river. This type of description is quite common within everyday language in areas that host describable features, for example 'go straight and then turn right after the river and right

again at the fork in the road'. In areas such as a forest where features may be less distinguishable, it may be more common to explain through direction, for example, 'go north, then turn east, then turn south'.

We have established that all maps are representations and have distortions. Projections are methods that attempt to reduce, although not eliminate, the distortions that occur due to depicting a three dimensional sphere on a two dimensional mapped plane. Various projections have been invented in cartographic history, perhaps the most famous being the Mercator projection. Although the projection distorts scale everywhere but the equator, it retains 'true direction' from location to location making it especially beneficial for oceanic navigation.

Depending on the type of projection, mapped elements will appear to occupy different locations and areas. For example, a route may seem longer in one projection and shorter in another. What appears to be a one day canoe trip on a projected map may actually be several days in reality. This has an effect on the way we understand relationships between spaces, the routes we choose to travel, and the perceptions of measured area.

*Figure 17. Pierre Desceliers' planisphere. 1550.
Copyright The British Library Board MS 24065.
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EXPLORATION + TOPONYMY

1.2

The Historical Atlas of Manitoba edited by Warkentin & Ruggles presents the history of permanent settlement in Manitoba through maps. The *Atlas* clearly presents the shift in mapping strategies that resulted from an increase of geographic knowledge, from early explorers unfamiliar with the land through to the establishment of the Dominion Land Survey and the certainty the grid imposed on the prairie landscape.

"The historical florescence of the cartography of Manitoba, as of any other area of the world, may be summarized generally as the gradual replacement of imaginative speculations and other forms of untruths by increasingly more accurate and scientifically established detail. Accurate delineation comes about only as a consequence of exploration and settlement, that is, through the development of an area" (Warkentin & Ruggles, 1970, p. 7).

Following Henry Hudson's discovery of Hudson Bay in 1610, European exploration began in Manitoba in 1612 when the English explorer Thomas Button set foot on Manitoban soil. As the explorers were amongst unknown land, imaginary elements within their mapping is understandable, with distortions in land form and geographic placement. The English focused on exploration

of Hudson Bay and the coast, while the French focused inward. Those travelling inward often relied on interaction and knowledge gained from the native people of the land. The local knowledge of the area was essential for survival, and influenced the accuracy of the European maps.

The map drawn by Cha Chay Pay Way Ti for Peter Fidler shows collaboration between European explorers and the aboriginal people they depended on to understand the land and direction (Figure 18). The map relates less to the desire for exact pin-pointing of geographic accuracy in the time of exploration, and more to the understanding of how one would move through the landscape, indicating sequences of lakes to follow. This speaks to reading the land for direction rather than depending on external devices such as a compass for navigation.

The act of exploration is a fascinating task of understanding one's own self in relationship to the land. Where am I, where am I going, where do I want to be? Toponymy, the study and naming of place, was very important in exploration as it offered a way of becoming familiar with a place. Place names were either quite descriptive of the land itself, named after a place from home for those who were

homesick, or named after the explorer who was noted for the discovery of the area or feature. This is quite obvious when understanding that Henry Hudson was the first European to formally discover Hudson Bay. It is fascinating to look through the early maps of the Bay and see where uncertainties arise in place names. In some maps, the Bay is named in a possessive form, as Hudsons or Hudson's Bay. This is a small shift, but represents the way the map makers understood the Bay to be named at that time, almost implying a type of ownership over the vast landscape.

Place names allowed explorers to know if they had reached the correct location. They could ask those local to the area for the place name and, if the place name had already been established in European culture, they would be able to understand if they were in the correct location. Place names fundamentally acted and still act as an essential addition to communication and greatly aided the exploration of Manitoba.

Figure 18. Sketch map of routes between Cumberland House and Split Lake "Drawn by Cha chay pay way ti May 1806", redrawn by Peter Fidler. 23 x 37 cm. Copyright Archives of Manitoba, Location code E.3/4 fo. 13d. Reprinted with permission.

APPLYING THE GRID

DOMINION LAND SURVEYS

1.3

"It was definitely a paradigm shift to think of doing a survey and making a chart for anyone's use, including one's enemy" (Morantz, 2002, p. 130).

After the creation of Manitoba in 1870, there was a need for a quick method of mapping the land. The Dominion Lands Branch was established in 1871 to produce various government surveys.

The Dominion Land Surveys were conducted to entice settlers to occupy and make 'improvements' to land in the Canadian prairies. This was done relatively quickly, especially along the border of Canada and the United States as there was urgency to establish national ownership. This quick, almost consumptive nature of settlement divided the land with the grid township system already in use in the United States; 6x6 mile townships, 1x1 mile sections, and 1/2x1/2 mile quarter sections. The townships and sections were measured with a unit called a chain, one chain equaling 66 feet resulting in 80 chains in a mile. If, and when, errors occurred in the survey, it was often due to slight inconsistencies in length of chain.

Although errors occurred, the accuracy of the survey as a whole is incredibly impressive. The realization of the mapped grid impressed on the land

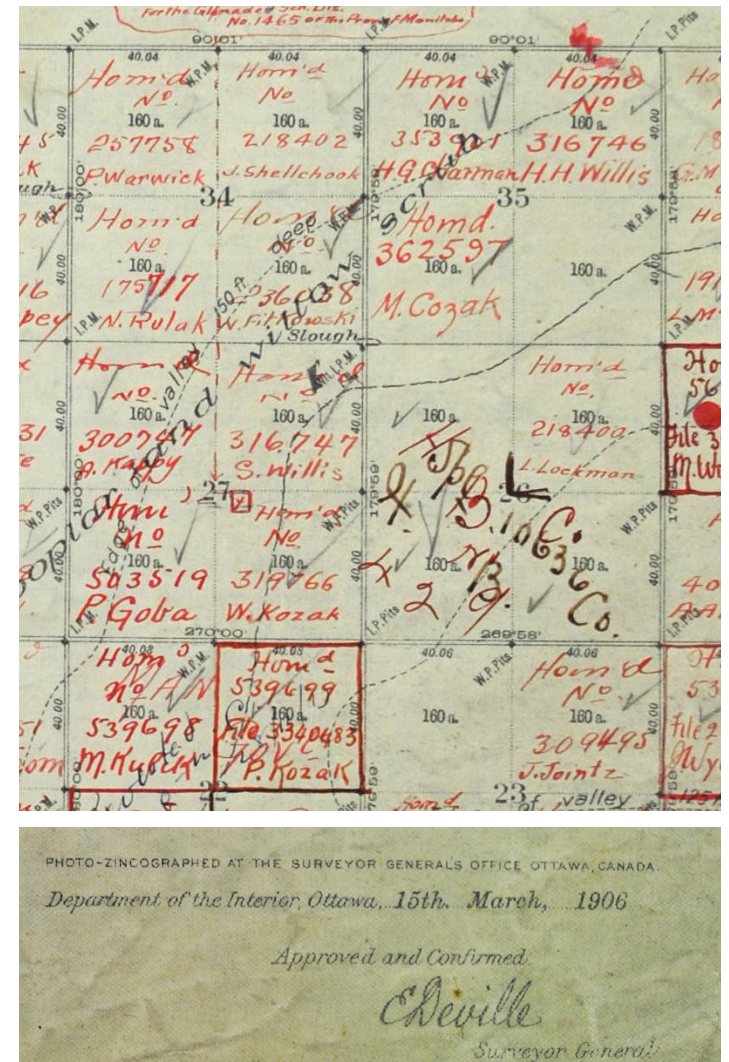
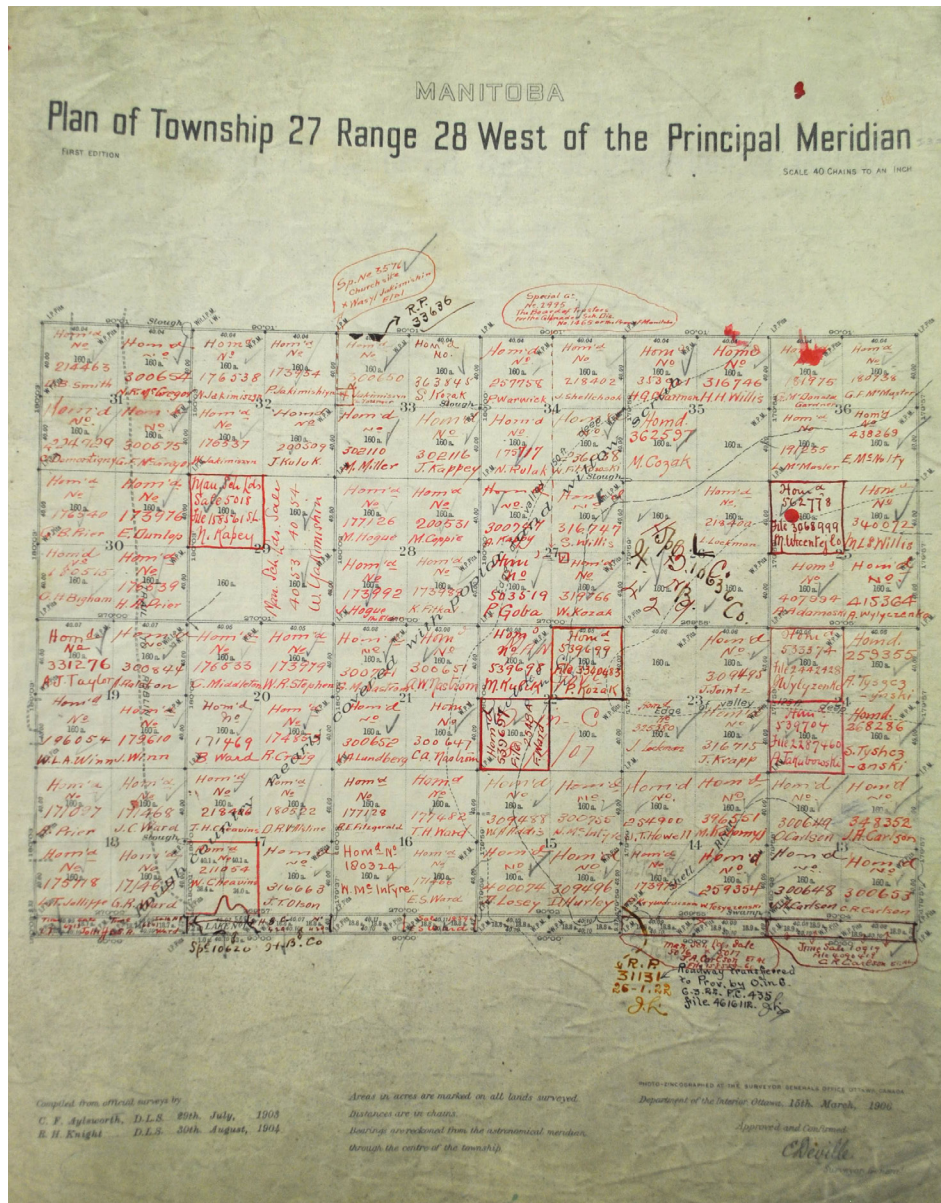
creates the almost perfect square pattern many North American prairie lands are known for.

"From time to time in the course of history, however, imperial powers have sought to occupy the inhabited world, throwing a network of connections across what appears, in their eyes, to be not a tissue of trails but a blank surface ... But lines of occupation do not only connect. They also divide, cutting the occupied surface into territorial blocks. These frontier lines, too, built to restrict movement rather than to facilitate it, can seriously disrupt the lives of inhabitants whose trails they happen to cross. They are lines, as the novelist Georges Perec has observed, 'for which millions of people have died'" (cited in Paasi 2004: 176) (Ingold, 2007, p. 81).

The 1 mile by 1 mile grid measured in chains was laid across any land forms and any people that were living in these areas. These boundaries have an impact on perception of the land in terms of ownership and land use. In addition to perception, the mapping of the area opened up interest in obtaining ownership of the land. The land would be vastly different today if it had remained forested and 'unimproved'. The idea of the land needing improvement in itself suggests perceptions during the time of settlement, in a sense, taming the

land for occupancy. These boundaries still play a very influential role in perceptions of the prairie landscape. They imply a type of permanence that make it difficult for many to conceive what the land was like prior to settlement just over 100 years ago.

Figure 19. Township Plan Range 28 Township 27. 1906. Copyright Archives of Manitoba, Schedule A 0076, Accession GR0126, Location G 10695. Reprinted with permission.



RANGE 28 WEST

PHOTOGRAPHY + CARTOGRAPHY

1.4

The representation of land through photography has profoundly changed the way we understand space and relationships between spaces.

Photography began to influence cartography around the 1850s (Andrews, p. xv). The first bird's eye view photos were taken in 1858 in a tethered balloon over Paris. The aerial photograph came into use after World War One. This greatly aided the understanding of geographic relationships and made topographic mapping easier (Warkentin & Ruggles, 1970, p.228). At this point there is a noticeable shift in cartographic representations as features of the land could be understood from a photograph rather than exploration on site. In some sense, this added a degree of detail about the land that was previously unattainable. In other senses, this detracted from direct interaction and exploration of the land providing a degree of separation between the person and the landscape. Below is a brief timeline adapted from the National Geographic Society expressing major shifts in the use of recording the land through photography. These specific shifts have been chosen for their influence on cartography and our perceptions.

1826: French inventor Joseph Nicéphore Niepce uses a camera obscura to burn a permanent image of

the countryside onto a chemical coated pewter plate. He names this technique heliography, meaning sun drawing.

1858: First bird's eye view photos. Felix Tournachon becomes the first to capture an aerial photograph in a tethered balloon over Paris.

1930: First aerial colour photograph by Melville Bell Grosvenor.

1935: First high altitude photo by Captain Albert Stevens which shows the curve of the earth and first colour photographs taken from the stratosphere.

1946: First photo taken from space. 35mm camera strapped to a German V-2 missile and launched into space 105 km above the earth's surface. First photos to show earth from space.

1966: First view of earth from the moon.

1972: "Blue Marble" shot represents the first photograph in which the earth is in full view.

1975: First digital camera, the size of a toaster.

1990: Adobe Photoshop 1.0 released for Macintosh. The Windows version was released in 1992.

2000: First camera phone and the beginning of "citizen photojournalism" of today.

2004: Kodak ceases production of film cameras. In 2003, US consumers bought more digital cameras than film cameras for the first time.

2005: Google Maps + Google Earth go live, where anyone with access to the internet can instantly receive a satellite image and gain directions to desired locations. Later, Google added the option for users of the program to add photographs linked to geographic location. Plans for the future include the addition of sound files to create a soundscape (Google, 2013).

Photography has influenced cartography as a method that is able to capture a transient moment, something that cartography cannot do. Satellite photography in particular has shaped the way we map as it is frequently used as a base to draw from (Figure 20). However, understanding the land from satellite imagery without understanding from the ground can only provide partial understanding. There is a need for ground proofing as with all remote mapping systems.

Figure 20. CanImage 054116. Churchill, MB. Copyright 2001 Her Majesty the Queen in Right of Manitoba, as represented by the Minister of Conservation. All rights reserved. Reprinted with permission.



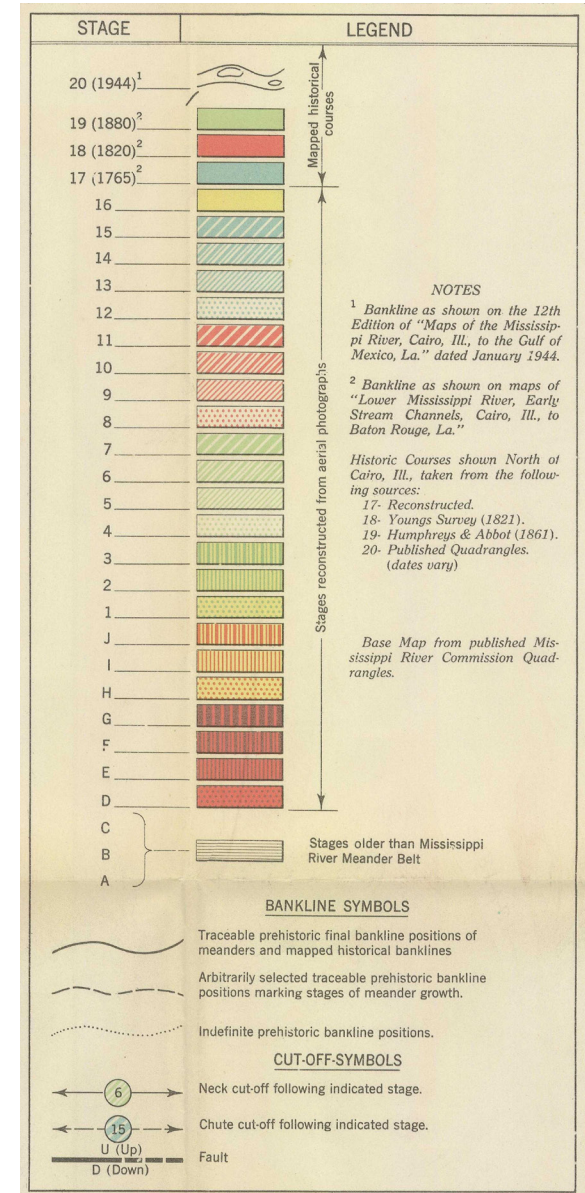
EXPRESSING TIME IN MAPS

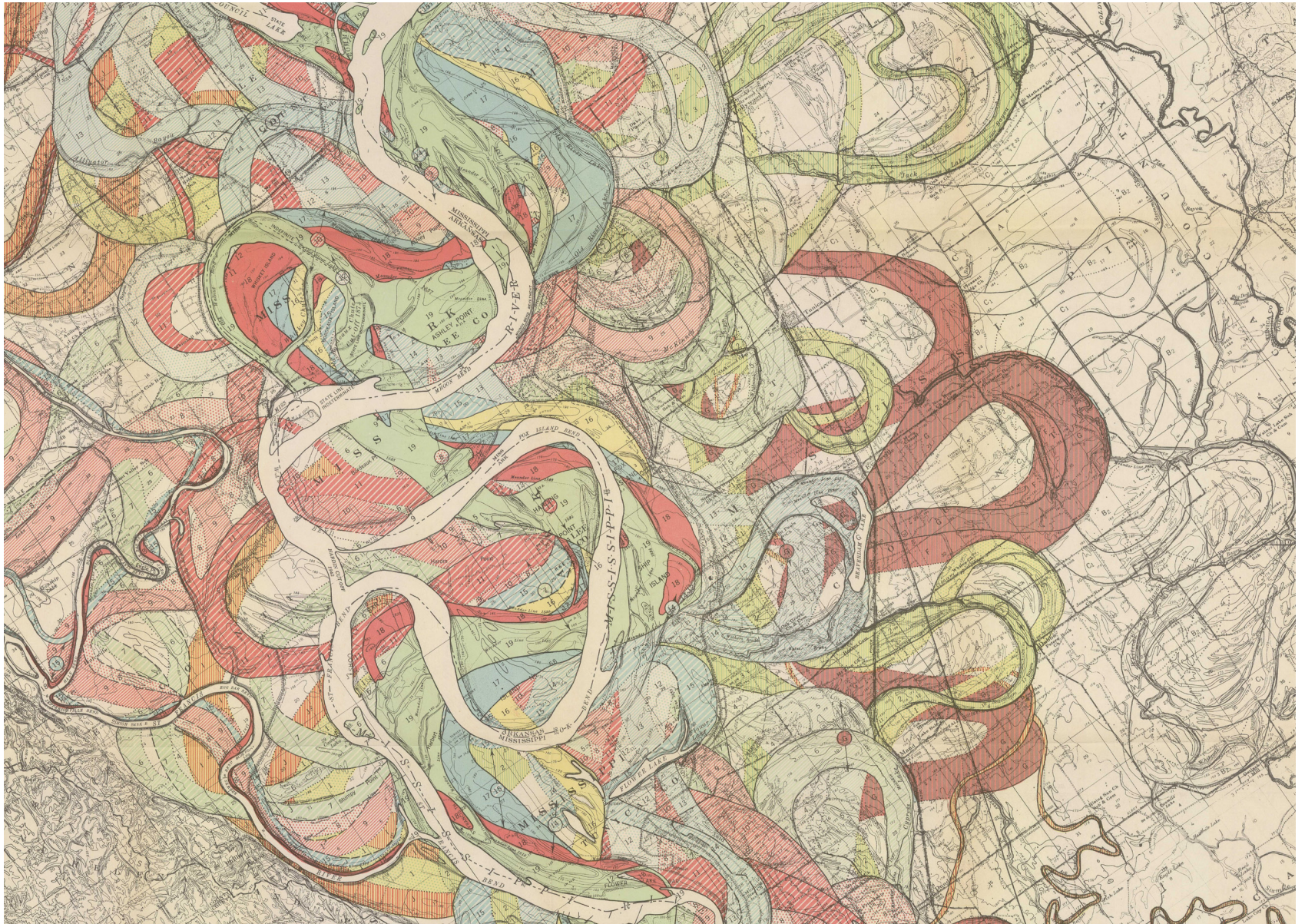
1.5

Maps of geologic formations have greatly changed the way we understand the land, especially in relation to systems of interaction between species and the landscape. They help us to understand the base that all other things live on and off of. An understanding of geology in a geographic context has assisted knowledge of the past, referencing time periods within corresponding maps.

Figure 21 presents a map of the Mississippi River and its changing courses over time. The meanders are drawn over top of each other, presenting an immediate understanding of the dynamic flow of the river. Harold N. Fisk is credited with the creation of this map and the supporting report titled *Geological Investigation of the Alluvial Valley of the Lower Mississippi River*. As the legend expresses, the complexity of information was made possible by previous surveys that acted as sources of information to build upon. The resulting map is rich with information revealing the forces of the river that are difficult for the average viewer to understand at ground level.

Figure 21. *Geological Investigation Mississippi River Alluvial Valley: Ancient Courses Mississippi River Meander Belt*, Plate 22 Sheet 6. Harold Fisk, 1944. Retrieved from <http://lmvmapping.ercd.usace.army.mil/>. In the public domain.





OVERLAYS + GEOGRAPHIC INFORMATION SYSTEMS

1.6

Techniques of overlay involve the representation of parts to understand the whole, with each part, or element, represented with the same map extent and scale. For example, this may include understanding the bedrock, the soil, and the vegetation as separate entities at first, and then overlaying the maps of each element to understand relationships. This technique originally began with the use of separate maps all showing different aspects. As the technique and technology progressed, the maps were printed on transparent sheets which allowed for the visual overlap and resulting understanding of relationships that they are known for. Geographic Information Systems (GIS) have furthered this concept with the digital ability to use computers to turn on and off layers at the touch of a button.

In the discipline of landscape architecture, Ian McHarg is a common name discussed in theory and in method of presenting data for support of site analysis through the use of overlays (Figure 22). This technique was made famous in the publication *Design with Nature* by McHarg in 1969. However, it is suggested in an article in the 1976 journal *Landscape Architecture* titled *Hand-Drawn Overlays: Their History and Prospective Uses* by Carl Steinitz, Paul Parker, and Lawrie Jordan, that

the overlay technique has its roots in the early twentieth century. Steinitz et. al. explains that in 1912, Warren Manning prepared at least four different data maps and one plan with recommendations for circulation and land use patterns for the farming and manufacturing town of Billerica, Massachusetts. Different elements of the site were drawn on separate maps, suggesting the idea of overlays without the explicit mention of the method.

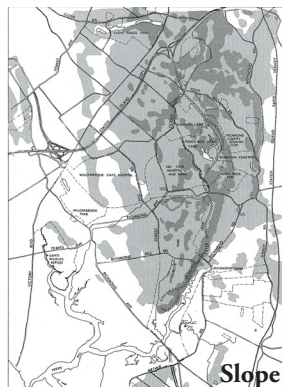
The Survey of New York and Its Environs was published in 1923. Here there is mention of overlays as part of the analysis. The progression of the technique certainly aided McHarg's publication that utilizes overlays as a main method of analysis to support the development of design decisions.

The technique of overlay established a method of recording information as well as making information comparable. Steinitz et. al. suggest that overlays came about as more site information was collected by various groups (whereas before the designer would analyze on site and compile their own data from scratch) with a desire for that information to be combined to understand relationships. The popularity of overlays was also due to the increasing scale of projects. Having the pieces of the whole allowed for the analysis of larger areas of land.

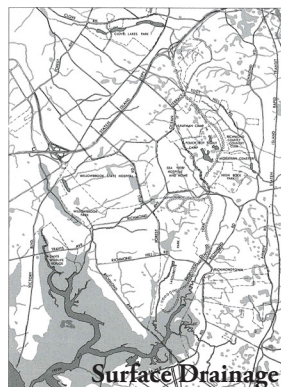
It is perhaps not surprising that the year the concept of overlays became a known topic through McHarg's publication, 1969, was the same year the concept of GIS was first introduced to the public in a film titled *Data for Decision*. Overlays produced by hand were time-consuming and expensive, and did not allow for flexibility in changing representation to fit certain types of analysis. GIS was designed to aid this process. The majority of contemporary map production relies on Geographical Information Systems (GIS). “GIS is essentially using computers to ask questions of maps ... The primary requirement for the source data is that the locations for the variables are known” (Morantz, 2002, p. 140).

Just as European explorers required information from those native to the land for direction and survival, so too does GIS utilize information from other people. The difference is that there is rarely interaction between the person producing the information and the person using it. “Using a derivative map can save time, but only at the risk of incorporating someone else's error” (Monmonier, 1996, p. 44).

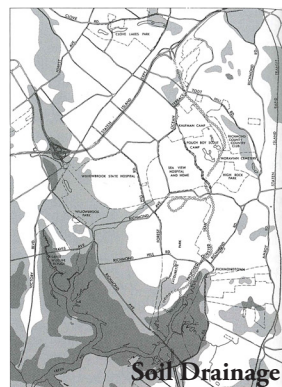
Figure 22: Overlay technique, Ian McHarg, *Design with Nature*, 1969. Copyright 1995 John Wiley and Sons. Reprinted with permission.



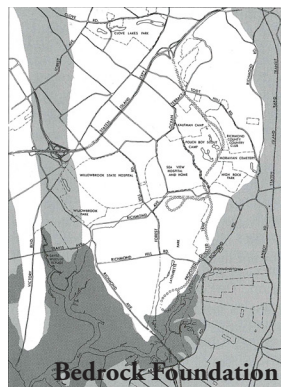
Slope



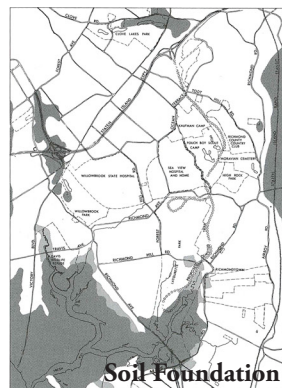
Surface Drainage



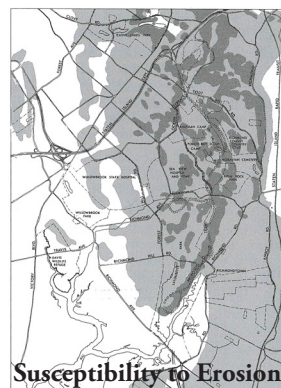
Soil Drainage



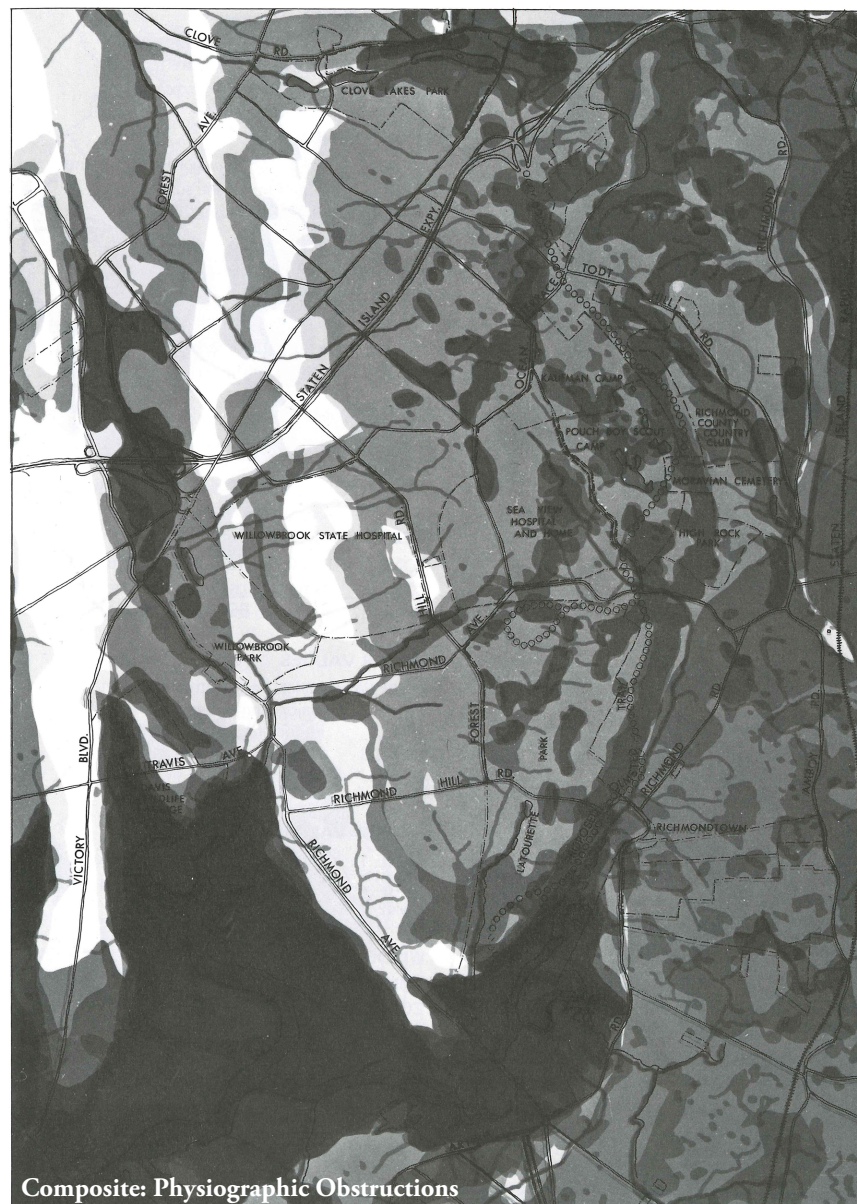
Bedrock Foundation



Soil Foundation



Susceptibility to Erosion



Composite: Physiographic Obstructions

CURRENT TRENDS

1.7

The main purpose that maps have served in history is to understand one's position in space, often used to assist navigation or to claim territory. Today, although they are still used for these purposes, new maps have emerged with a desire to represent different types of information. Current trends in mapping are not only about the representation of physical features of a place, but also about external influences that contribute to a place. For example, there are several renditions of the map of the world with areas of countries re-configured based on population size rather than land mass (as there are several examples of this style of map, no specific reference has been cited). This type of graphic changes the typical perception of the map of the world that is present in nearly every human mindset. It makes one reconsider relationships and provides an awareness of conditions across the globe. When compared to the typical map of the world based on land masses, a notion about population density can be interpreted.

This desire to produce maps about information is arguably due to the large amount of information to which we have access. Historic cartography has amounted to a rather whole understanding of geographic location, whether through early interpretations of imagined lands, exploration to

confirm believed understandings, or photography to increase detailed comprehension of the land. As the lay of the land is well understood (although there is always more to learn), cartographers have become interested in representing information that is not always perceptible on the ground. The intention is to make the map reader aware of what they may otherwise not see in actual experience.

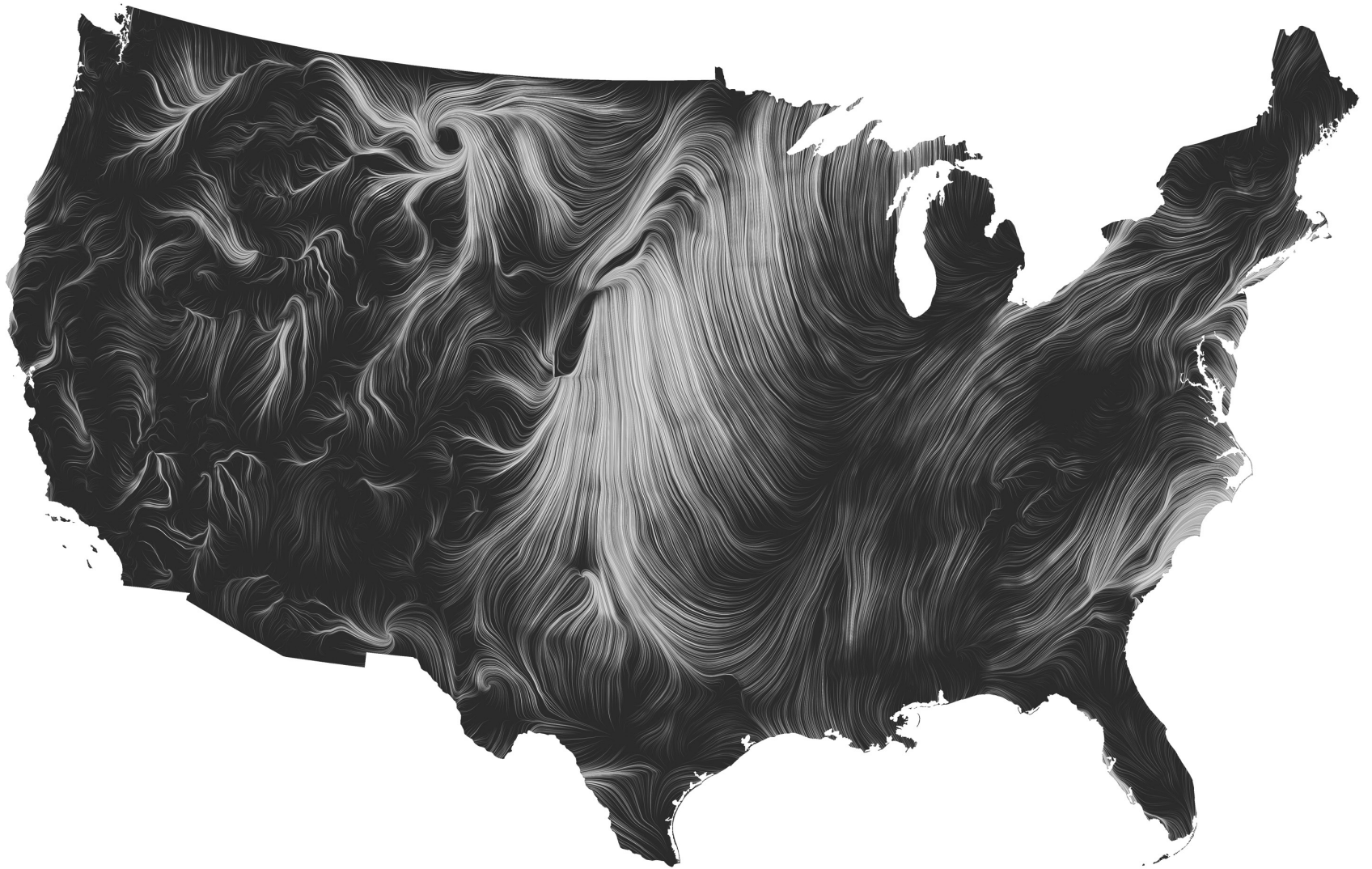
“Traditional cartographers who scorn cartograms as foolish, inaccurate cartoons ignore the power of map distortions to address a wide array of communication and analytical needs” (Monmonier, 1996, p. 18).

The Wind Map (Figure 23), designed by Fernanda Viégas and Martin Wattenberg is an interactive map which gives an appearance to the otherwise invisible qualities of wind. The map can be found on the website <http://hint.fm/wind/>. Seamless lines representing wind continuously blend into each other expressing complexities of wind velocities in real time. Intensity of line on the map relates to intensity of wind, with the highest density of line representing the greatest velocity. The map is profoundly expressive of this force of energy, but through the nature of wind itself, the map is also expressive of landforms. Landforms such as the mountains in

the west and the prairies in central United States become apparent, not through direct representation, but through wind patterns of void and occupied space. The designers have expressed their interest in creating similar maps for other parts of the world, but have been focused on the United States as wind data is readily available for all parts of the country from the US government (Viégas & Wattenberg, May 23, 2013).

The Wind Map exemplifies current trends of mapping information and applies an interactive approach that is insightful and well designed. It alters perceptions as it renders the invisible force perceptible across the entire country.

Figure 23. Wind Map, July 13, 2013, designed by Fernanda Viégas & Martin Wattenberg'. <http://hint.fm/wind/>. Copyright Fernanda Viégas & Martin Wattenberg. Reprinted with permission.



COGNITIVE MAPPING

1.8

Although this topic is addressed last in this section, it should not be inferred that this type of mapping is last chronologically or more recent. There has perhaps been more attention to the importance of these types of map since 1948 when Edward Tolman popularized this concept, proposing that *"all mobile organisms are capable of forming, and in fact do form, cognitive maps, which enable them to learn places and thus to move around in their spatial environment"* (Downs & Stea, 1977, p. 214). However, cognitive mapping is involved to a greater or lesser extent in all map production.

Cognitive maps help us to solve spatial problems on a daily basis as we imagine travelling routes or being at certain locations as well as moments that have happened along these routes or at locations. This helps us understand the relationships between physical characteristics of the world. Through this type of mapping, we are able to better understand how we relate to space.

A cognitive map is produced through memory of places, often on a blank canvas. The intention of this type of map is to learn one's understanding of the land, of other conceptual space or subjects and of spatial relationships, without the influence of existing cartographic constructs.

Cognitive maps are unique to each individual person. *"The world as we believe it to be is a synthesis of different types of information: visual, auditory, olfactory, and kinaesthetic. People mix these information types in varying proportions and place greater emphasis on different sensory modes. Consequently, cognitive maps show tremendous individual differences"* (Downs & Stea, 1977, p. 23). Both reality and fantasy will be apparent in these types of maps.

Cognitive maps are not only produced by one's recollection of the land based on experience, but also by past cartographic constructs they may have viewed. If one imagines the map of the world that is introduced to many people during early childhood education, or satellite imagery from a source such as Google Earth that is readily available to users today, it is easy to understand how knowledge of the land from these sources can influence our understanding of the land. For instance, when one imagines travel from the interior of Canada to one of the Canadian coasts, most people will already have an image in their mind of the general direction of travel, based on their recollection of previous cartographic productions. As mapping products become increasingly available to users, it is likely that this will shape the way people understand

the land. This understanding has, and will increasingly promote a reliance on maps to tell us where to go rather than looking to the landscape for direction.

The cognitive maps in Figure 24 are my own creations of mapping (in a five minute time period) my family's farm based on cognitive recollection. The left map was drawn at the beginning of this practicum and the right map was drawn near the end. Even though the second map was drawn after learning more about the land from practicum study, it is still similar to the first map. Therefore, the way I imagine the land to be has remained quite similar, even though I understand the factual aspects of the land to be different. Cognitive mapping in this case was heavily influenced by memory and less about contemporary experiences.

Figure 24. Cognitive maps of a familiar landscape. Left, prior to research, right, mid-way research.

THE VALUE OF CONSCIOUS CARTOGRAPHY

1.9

As stated at the beginning of this chapter, maps cost money. As technology advanced, map production increased with the establishment of data sets and programs able to manage the sets. Technologies, in general, have decreased the time it takes to create a map, rendering the process less expensive. The move from hand to computer mapping was inevitable.

The study of cartography makes it clear how our ideas have shifted about the land, based on advancements in technologies and changes in focus (from imagining the land, to mapping relationships trying to gain actual or factual representation, to understanding where we are located in the context of other entities, to mapping for factual purposes to understand the science of a site, to mapping for purposes of understanding other types of information).

The maps of early European exploration, although often coarse in detail, show one's journey and interaction with the land; what was important, what was frightening, what was beautiful, what was unknown.

As the Dominion Land Surveys progressed, precision in mapping increased as the surveys divided the land into a grid that made plotting

points more predictable and land ownership more feasible and distinct.

The age of satellite photography has led to the sharing of mapped information through programs such as Google Earth where an understanding of the land is available to users almost automatically, assisting our everyday navigation.

With the map of the world, and our country, and our city, and our street in our everyday subconscious and often conscious state of mind, we are programmed to know which way to go. Current trends in map production reverse this idea, producing maps that do not tell us where we are, but make us question the influencing forces around us.

Depending on how maps are used, they can either disconnect us or connect us to the land. If we depend on them for direction, we may end up losing sight of visual cues in the landscape that provide essential detailed understanding of our relationship in space and in connection to the ground.

Map production and consultation is common to everyday practice in the discipline of landscape architecture. A faulted interpretation of a map can lead to poor decisions and unsuited

design in relation to a site. For 'fly-in' designers who may only have a few hours to gain a partial understanding of a site of study, it is likely that information used to support design decisions will be supplemented with previous maps produced by others. It is therefore important to be mindful of the way representation of the land influences thoughts towards it.

Maps are compelling forms of information that can and should be admired for artistic ability as well as the quality of data they host. The appreciation of the beauty of a map may be the peak of interest for certain map readers. However, an understanding of the influence maps have on our perceptions of the land and other mapped elements can reveal valuable information that may otherwise go unnoticed. To reveal this information, one must be slightly skeptical of what elements are represented, and ask questions of maps.

"The fictional and incomplete characteristics of maps are often masked by the appearance of measured objectivity, as too are the effects that maps have upon people's future actions. Moreover, not only are these fictions the result of particular methods of construction (and, thus, only one outcome of many possible schemata), but they are also biased with regard to what is shown and what is not. Interpretation, after all, never value neutral, no matter how sincere the claims of impartiality ... Similarly---in ways that are spatial, symbolic, and susceptible to misuse--- the new aerial representations of the twentieth century have effected a new awareness of regional and global ecologies, instigated the planning and large-scale settlement of land, and colored the imaginations of millions of people who now live and act upon the planet. "

- James Corner,
Taking Measures Across the American Landscape, 1996, p. 18

TWO.

*Concepts of Cartography through Photography
-using a datum to contrast perceptions*

THE SHELL RIVER VALLEY

my own perceptions

2.0

The study of cartographic concepts in Chapter One revealed the importance of considering biases within maps, whether of the map maker or the map reader. These biases become embedded in mapped representations and resulting understandings of the land. Realizing this made me question my own relationship to the Shell River Valley, with a curiosity to discover which biases may be contributing to my perceptions of the familiar space.

"The cool country that is sought is not that of the working farmer but of the fortunate resident" (Williams, 1973, p. 47). Although I do not reside in the valley, I could be considered in the same sense as the 'fortunate resident' as I visit the land and enjoy its scenic qualities and teachings in a relaxed state. I do not work the land, nor do I experience it on a daily basis. This is not to devalue the type of relationship I have, but to make myself aware that my connection to the land is quite different from those who live on and work with the land.

My romanticized perceptions of the valley have been shaped through experience and revised understandings, and have been altered by imagination and memories. I have been comfortable with what is familiar and am only now learning, for better or for worse, that the way I imagine the

valley to be in a geographical sense is quite different from the way it is in reality. This has been made apparent through site exploration conducted for this practicum. Even the methods of travel to and from the farm (train, bus, and car) have shifted my thoughts about the area as additional information and additional vantage points are revealed and digested (Figure 25).

Although my understanding of the spatial aspects of the valley have been recently challenged and revised, the way I feel about the space has remained constant. It is a space of wonder, excitement, love and learning. A place where I can get lost in a positive sense; both physically and cognitively. The experiences I have had with the land have shaped my interests and values, and have developed into a passion for environmental protection. In this passion, however, comes a type of possessive nature. As I feel a strong connection to the land, the ideas I have about how to conserve the land have become locked in my mind as ideal methods. These types of thoughts can quickly become barriers when communicating with others who may also have strong connections with the land with differing opinions about land use and conservation. This process of self-reflection was therefore necessary

to conduct prior to interviewing others about their perceptions of and relationships with the land. Recognizing that my perceptions were not necessarily a reflection of 'actual' occurrences allowed me to be more open to other perceptions than my own. What follows are the processes of discovery used to understand my own perceptions of the physical and imaginary world of the Shell River Valley.

Datums (reference points) were used to compare and contrast my ideas about the land to reveal familiar and unfamiliar aspects, both in terms of physical and imaginary constructs. This was done through photography as a medium and tool for exploration and record.

Figure 25. On the train to the farm. Image distortion is due to another train passing in combination with window reflection.



CARTOGRAPHY THROUGH PHOTOGRAPHY

2.1

Of the cartographic methods discussed in Chapter One, photography is perhaps the most influential aspect that has changed the representation, method of recording, and analysis of the land. It offers an instant visual record of a moment in time, whether through aerial, satellite, or ground level photography. It has great power in providing detail about a space. As such, a reliance can easily develop on the photograph to record, detracting from a conscious interaction with the land by the photographer in the 'actual' moment.

Similar to maps, photography can provide an instant understanding of certain aspects of a space. It also hosts similar distortions through the two dimensional representation of a three dimensional subject. In addition to physical distortion, the photographer's bias of subject and composition, control of light through aperture, shutter speed, film sensitivity, and framing of images all influence the way viewers of the photograph may perceive the portrayed space. This is demonstrated in Figure 26 where a single image taken within the Shell River Valley is presented with three different frame extents; the entire frame, a vertical strip showing ground, horizon and sky, and a horizontal strip showing a cross section of the photo. In this case, the datum is the

photo and the change is that of the frame. Although the photos were chosen and arranged at random in an attempt to reduce bias as much as possible, the compilations express how framing images can provide different emphasis on various elements in the photograph. The viewer may perceive the represented space differently depending on frame extents and the elements of focus. This is the same concept that was illustrated in Chapter One in relation to cartography.

Cartography and photography differ in that a photograph represents a single moment in time, whereas maps employ a compilation of data from many moments. The addition of time through comparative photography can present landscape change in an instantly perceptible graphic. These changes that may otherwise remain undetected become revealed and influence perceptions of the space (see 2.2 Comparative Photography).

Photography is rarely scalable, with the exception of satellite photography that can be geo-referenced to match a cartographic scale. Section photography has been experimented with in an attempt to add scale to site photographs taken at ground level. Although the resulting image is not one that would be seen in reality, it offers a method to compare the scale of

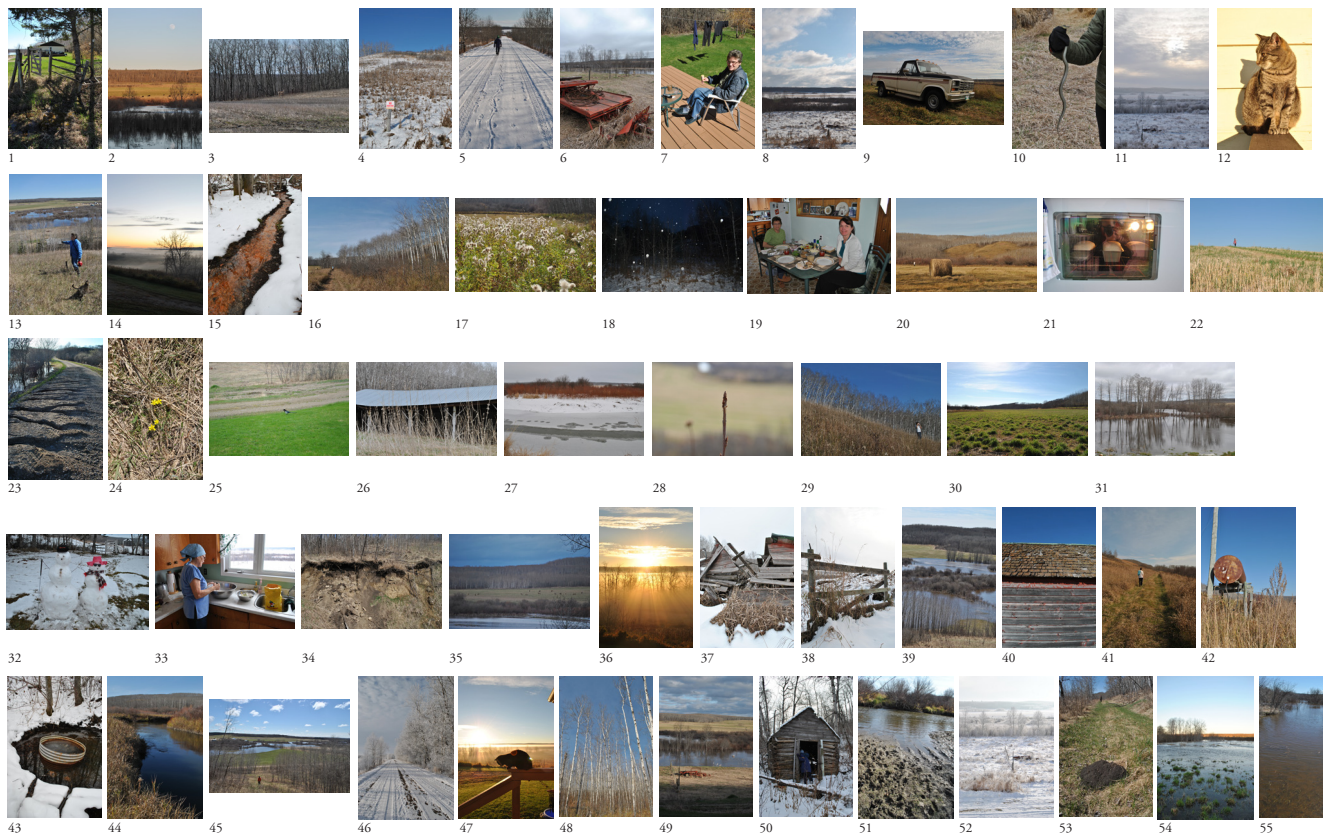
spaces through a horizontal reference (see 2.3 Section Photography).

The quarter section grid resulting from the Dominion Land Surveys can provide a datum to explore land uses and perceptions of an area through photographic pacing (see 2.4 Following the Survey through Photography).

The following pages are detailed accounts of Comparative Photography, Section Photography, and Following the Survey through Cartography. When perceptions are compared against these methods of measured datums, familiar and unfamiliar elements in the landscape become apparent. This assists with understanding perceptions of those with relation to the land. These methods help to expose what we think we know, and open our minds to discover what may be right in front of us, but imperceptible due to familiarity.

Although these techniques could be explored with other people, this section has been written from my own perspective to understand my perceptions of the Shell River Valley more fully.

Figure 26. Entire photographs, vertically framed photographs, and horizontally framed photographs.



COMPARATIVE PHOTOGRAPHY

measuring time

2.2

Comparative photography is a valuable method for landscape analysis as it is able to express change in an instant visual understanding. The strategy of the method is to take photographs in the exact same location as an historical photograph, which when compared provides a clear understanding of changes that have occurred over time.

A Lens of Time by Cliff White and E.J. Hart depicts the history of the Canadian Rockies over 100 years. Specific focus is directed towards Banff and Jasper National Parks, with support through 'repeat photography'. The comparison of old and new photographs provides a base for comments towards the ecological health of the area, the ecological issues caused by keeping up an appearance for tourists, and the constructed developments that have occurred.

The comparative photographs presented within *A Lens of Time* are both beautiful and insightful. The mountainous landscape and other shifts in elevation act as detailed datums which aid the comparative photography process providing clear features of which to align the new photograph. The challenge of conducting this type of photography in a mountainous region is the rugged and steep topography one must climb to reach the exact point and exact

angle the previous photographer was standing at during the original shot. The advantages and challenges of conducting this type of photography in a prairie region are exactly the opposite. Advancing over the terrain is a relatively easy task, but finding a datum is a challenge. With a lack of elevation change, and in a rural landscape where human constructs are often only present in the farm yard or along fence lines, existing datums are limited. Furthermore, the task of comparative photography in a forest is almost impossible without the knowledge of the original photographer's position. Those pursuing comparative photography should consider choosing original photographs based on the presence of a datum and their familiarity with the location of the original photograph.

Comparative photography requires accuracy. One must be standing in the exact same position, use a similar depth of field and lens, and have the same positioning of the camera as the original photographer. A subtle shift in camera angle up and down or right and left will change the alignment and distort the composition.

Flood comparisons of the Shell River Valley were produced after learning that residents in the area thought the flood of 2011 was worse than 1987.

Curious, I walked to the top of the valley with a photo my grandpa had taken of the 1987 flood and shot the same angle (Figure 27). Comparative methods show the flood extents to be almost identical on the day the photograph was taken, which was near peak water levels. Although no further investigation was conducted, this realization has the potential to begin a conversation with residents about other factors that may be affecting the perception that the flood was worse in 2011.

Agricultural use comparisons situated around a barn in the Shell River Valley were conducted. When the barn was functional, it was perceived as an everyday object unworthy of photographs. This was during a time when the act of taking a photograph was carefully considered as film and film developing were expensive. It was not until much later when the barn started to decay and return to the land that there was interest in capturing it through photography. Figure 28 compares a photograph from 1975 (one of the only photos of the barn prior to 2009) with a photograph from 2012. There was difficulty in this shot as many of the datums from 1975 no longer exist. Figure 29 shows the fall of the barn over three years.

Figure 27. Comparative photography of flooding extents in the Shell River Valley.



May 1987



May 2011



April 2012



October 1975



December 2012



Figure 28. Comparative photography overlay of the barn yard.



September 2009



December 2012



Figure 29. Comparative photography overlay of the fall of the barn.

SECTION PHOTOGRAPHY

measuring scale +
incorporating perception

2.3

Section photography was designed for this practicum through paced measure and constrained camera angle to present relationships between spaces in a compiled image. The image serves as a datum that can be manipulated to compare and contrast perceptions of these spaces in terms of scale.

A rural residential road corridor in the Shell River Valley was analyzed through section photography. In addition to providing vehicular access, this space is frequently used as a walking path. Distances can be easily perceived along this level and accessible road and the amount of time it takes to walk is fairly certain. These certainties change quite a bit if one moves a few metres off the road in either direction. Turn one way and you are in a cultivated field full of ant hills, badger holes, and tall grasses. Turn the other way and you are in dense brush with aspen, dogwood, barbed wire, and wet ditches, which opens up into a narrow residential hydro corridor. Within a very short distance the qualities of each space change drastically, affecting the feeling, pace, attentiveness, and energy output of the person walking.

Section photography was conducted as follows. Facing one direction the entire time, I side-stepped in a straight line from the field, over the road, through

the bush, and into the hydro corridor, taking photographs every step. This straight line acted as a cross section of the land. The photographs were compiled digitally in the order they were taken; first in a straight line, and then adding topographic shifts similar to the way one would when drawing a section of the land (Figure 30). The photographs laid out side by side were much too small and inefficient at representing the land at a manageable page size. A method of overlay was necessary.

The images were overlaid on one another, with careful alignment of the horizon in the background (Figure 31). Through this method, the left edge of each photo is displayed. An odd curve that does not exist on site appears in the compilation due to the overlap, which is especially noticeable at the road.

In an attempt to reduce the resulting curve, the middle of each photograph was used rather than the edge. To determine the width each photo would occupy in the compilation, tire ruts in the field were used as a datum against which to decipher measure (Figure 32). Several widths of photographs were tested for their relative accuracy in portraying the ruts. The width that best represented the appearance of the ruts in real life was chosen for use in

the compiled section. When overlaid on an aerial image, the unit of measure through pacing is realized to be quite accurate (Figure 33).

After reflecting on the photographically measured section, I noticed that the road and the hydro corridor seemed larger and the field and vegetated areas seemed smaller in comparison to how I imagined the land. It is likely that I imagined the field and the vegetated areas to be larger than they are due to the vastness of the field and the slow pace of traversing the dense brush. I applied my own perceptions to the section by adding larger strips for the field and brush and smaller strips for the road and hydro corridor (Figure 34).

Once this process was designed it was relatively quick to apply to other areas. A section through an oxbow in transition was conducted (Figure 35), with the addition of perception (Figure 36).

This method of Section Photography allowed me to contrast my perceptions of the land against a measured datum and made me aware that I imagine the land to be much larger than it is.

Figure 30. Section photography.





Figure 31. Testing methods of overlay in section photography.



*Width of tire ruts taken at the centre of the image
as that is where photographic distortion is the least.*

*The 2nd unit of measure is the most similar to the
actual width.*



Figure 32. Attempting to discover a unit of measure through the comparison of tire ruts.

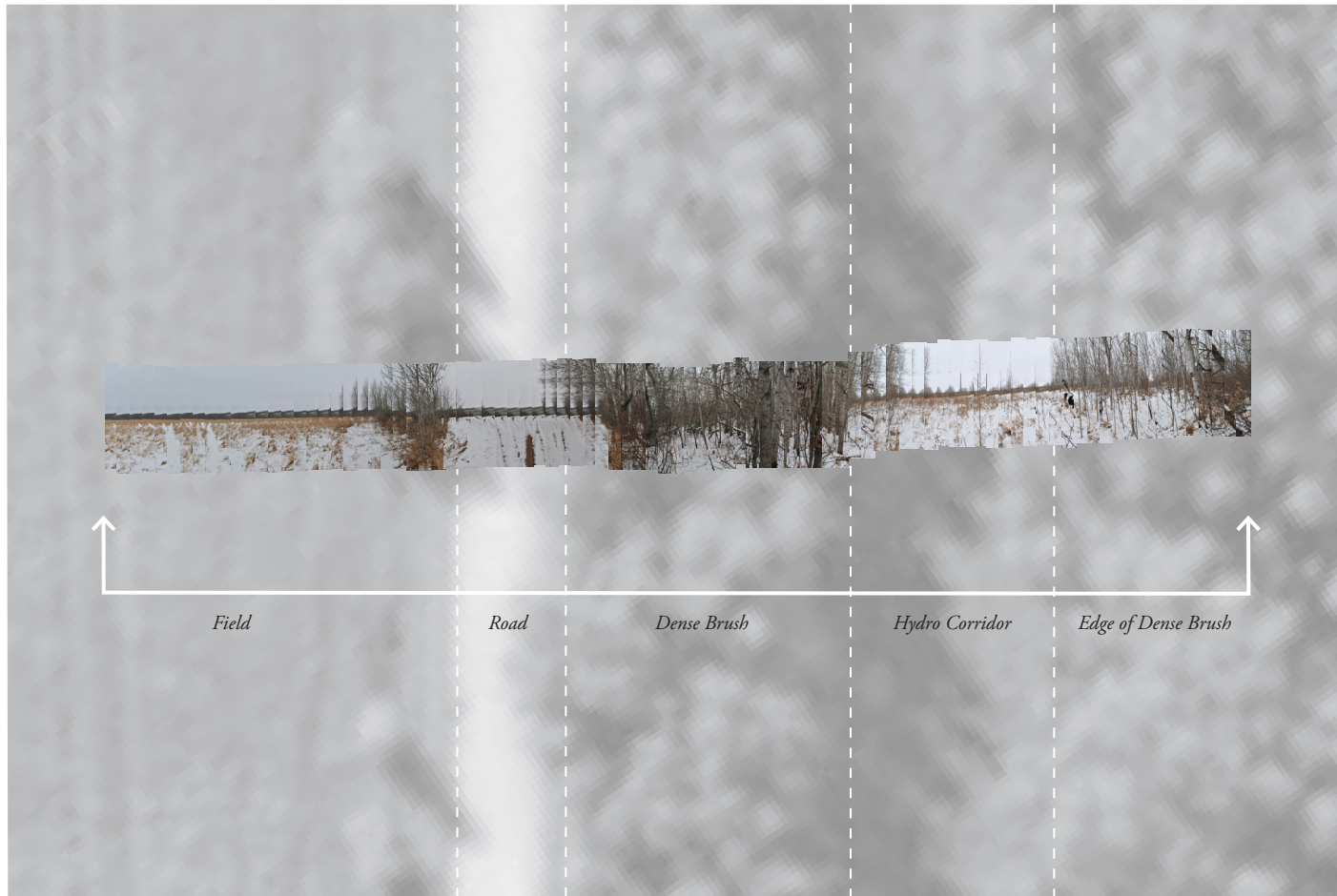


Figure 33. The unit of measure is realized to be fairly accurate when compared to the satellite underlay.



Figure 34. Section photography expressing areas imagined larger and smaller.

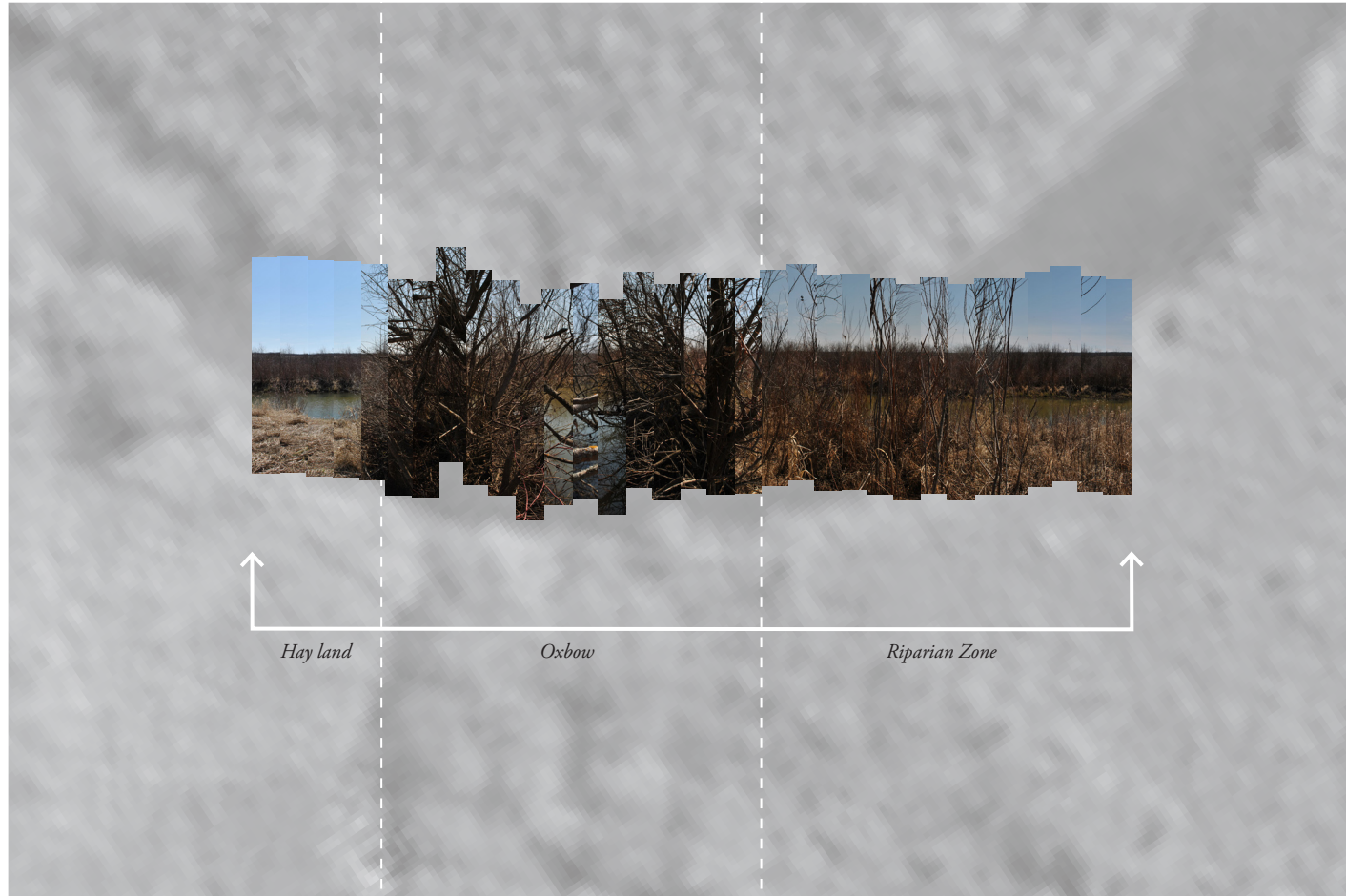


Figure 35. Oxbow in transition. The unit of measure is realized to be fairly accurate when compared to the satellite underlay.



Hay land

*Oxbow
(imagined larger)*

Riparian Zone

Figure 36. Section photography expressing areas imagined larger and smaller.

FOLLOWING THE SURVEY THROUGH PHOTOGRAPHY

measuring scale to verify
perception

2.4

Methods of Section Photography revealed that I imagine the area of our family's farm to be larger than it is. This is probably because most exterior boundaries of the farm are concealed in forested areas. Without a visual reference point, the space can easily be imagined as expansive. Curious, I walked the boundary lines imposed over 100 years ago by the Dominion Land Survey to gain a sense of scale and to understand land uses in the area. The walk took seven hours and covered half of the section as the other side of the river was unreachable due to spring water levels. A photograph was taken approximately every 15 metres. Effort was made to take the photograph directly on the fence line, however, in some cases the fence line no longer existed or was unreachable due to dense brush or waterlogged areas. In all of the photos, my family's land is to the right of the fence line.

In addition to exploring areas I had never been before, the people that accompanied me on the boundary walk opened me up to new ways of seeing a familiar landscape.

I walked the first three hours with my grandma. As a land owner who does not farm the land, she found the walk valuable as it made her aware of both external human influences and environmental influences occurring on

the land. This included the awareness of hunting structures, where fences had been cut, where livestock had gotten loose, and where drainage had cut channels into the fields. I found personal value in the walk with her as I was able to gain a better understanding of my grandpa's farming practices and learn of her fond memories of and current love for the land.

I walked the last four hours with a resident of the area I had met previously, but had never spent time with prior to the walk. Observing the way he moved through the land (for example, using fallen trees as a naturally cleared pathway rather than attempting to push through thorny brush), and the ways he saw the detail in the landscape as telling stories (for example, imagining where past homesteads may have been based on clearings), was valuable in helping me perceive the land in new ways.

This act of following the survey through photography was a way to take my familiar understanding of the land and make it unfamiliar by exploring unknown areas, by adding measure through pacing to understand scale, and by experiencing the land with other people that added new perspectives to my familiar thoughts. Although I have always had appreciation for the valley as a whole

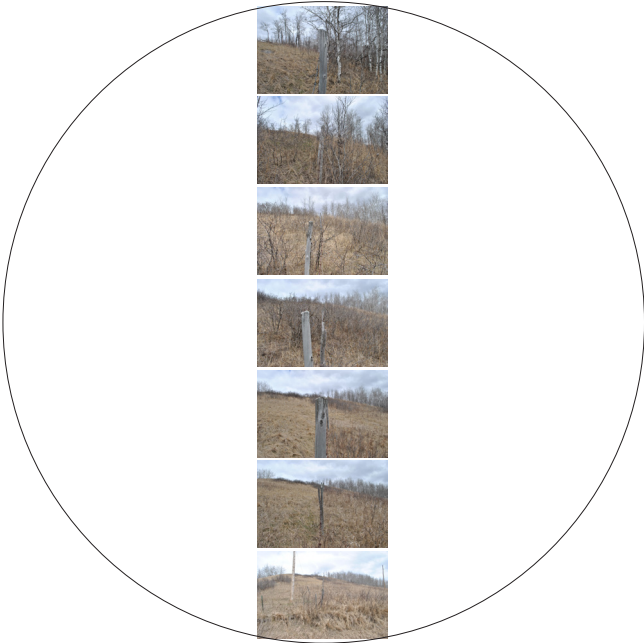
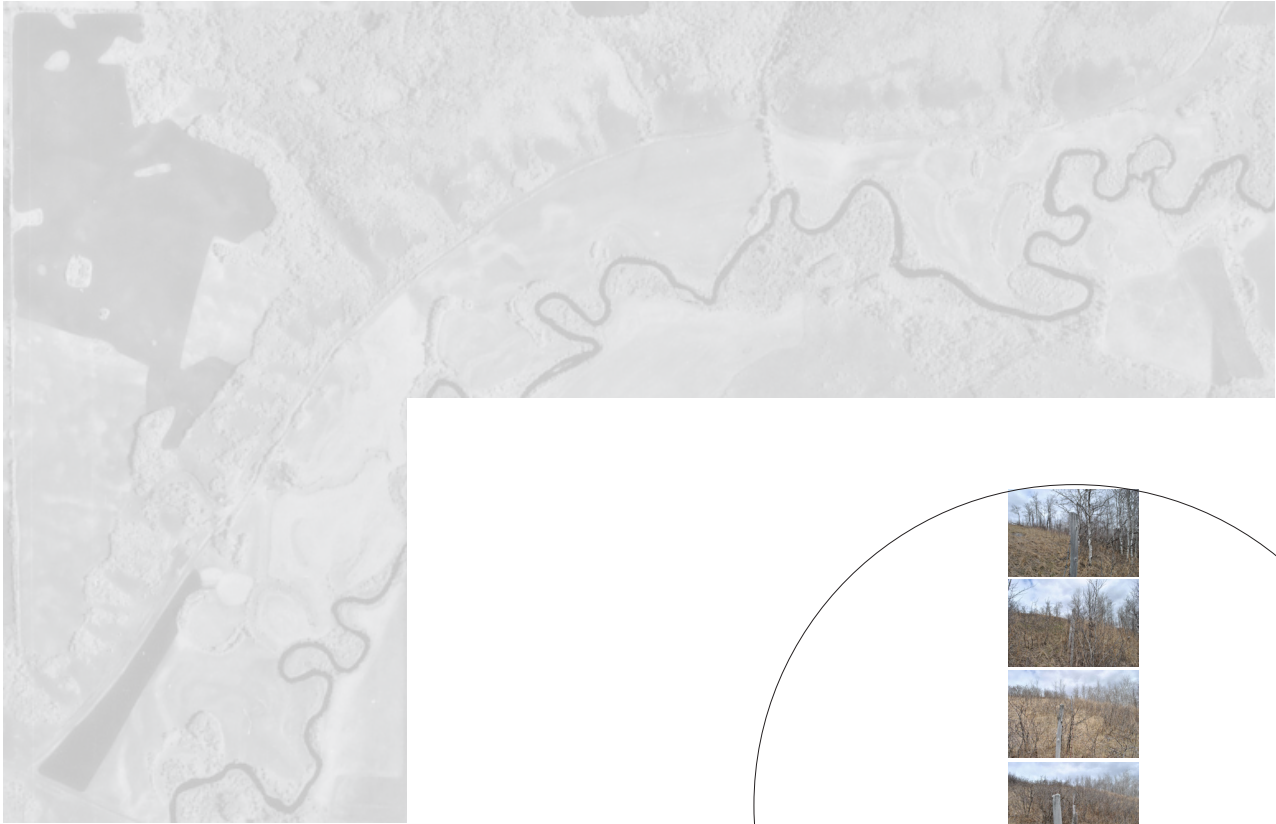
for many reasons (wildlife movement, habitat, agriculture, water, geological forces, the history prior to settlement), this walk made me aware that my understanding of the land is contained within the fence lines.

I was surprised how much the fence line influenced my perceptions, not only in terms of scale, but also in terms of ownership. When I was on our family's side of the fence I felt at home. When I walked one foot over on the other side of the fence, I felt like I was somewhere I did not belong. Prior to this walk I was unaware that the visibility of fence lines had influenced my perceptions of the land based on ownership.

Figure 37 shows a compiled map with photographs of the boundary arranged at the geographical locations they were taken. At this scale, detail is unrecognizable. There is, however, an instant recognition of open fields and forest due to light and dark tones of the photographs.

The following pages exhibit the individual photographs at a larger scale for the purpose of understanding detail and land use. They are to be read from the bottom left to the top of the column, and then from the bottom to the top of the next column.

Figure 37. Following boundaries with photography.







SUMMARY

revealing unfamiliar
perceptions of a familiar
landscape

2.5

The methods discussed in this chapter have allowed me to question my familiarity with the Shell River Valley through various uses of datums and photographic recording.

Prior to this practicum, my personal perception of the land was that it was vast and unending. In my imagination the land was far from roads and other human constructs. I thought of the land as generally untouched by humans and imagined it in isolation from its surroundings. In many ways, the thoughts that I had of the land when I was a child have continued through to adulthood as I never needed to question them previously. Although I refuse to let go of my initial childhood thoughts about the valley, especially in relation to the wonder, excitement, and imaginary innocence it offers, understanding the land in this new found way provided a better frame of reference to approach other people with different relationships to the land. Analyzing the way I relate to the land was a necessary step before visiting other residents for interviews (Figure 38).

*“And what we have to see ... is not only the reality of the rural community; it is the observer’s position in and towards it; a position which is still part of the community being known” (Williams, *The Country and the City*, p. 165).*

Figure 38. Interviewee walking in the Shell River Valley.



THREE.

Cartography + Interview
-revealing others perceptions of the land

UNDERSTANDING THROUGH PEOPLE

3.0

The embedded biases in maps understood through cartographic study in Chapter One and the explorations through measured photography that revealed familiar and unfamiliar perceptions in Chapter Two support the importance of speaking directly with people to reduce assumptions. The explorations of my own perceptions made it apparent that I view the land in an idyllic state, and am only familiar with a small portion of the valley lying within the section lines of our family's farm. In order to gain a better comprehension of the area and of human values, it was necessary to approach those who live in or visit the valley.

Landscape architects are tasked with developing creative solutions to a variety of issues with an attempt to find a balance between human desires and landscape capabilities. The types of topics researched during site analysis and the quality of the researched information affects the outcome of the design. It is therefore important when approaching people for the collection of site information to be mindful of which methods may reveal certain types of information, whether this be qualitative or quantitative. For example, a designer may ask someone familiar with a site to pin point all the locations they are aware of that contain wells. The very act of marking

individual points on a map is likely to produce quantitative information as exact locations are often desired. If pin-pointing was the only type of method employed to gain information, qualitative thoughts may not work their way into the conversation and may be left out of design decisions.

The following pages present various methods that were employed while interviewing people with a relationship to the Shell River Valley. The methods were chosen for their ability to enable the interviewer to understand the land in a geographic and cognitive manner through the people. These methods include cognitive mapping, pin-pointing location, photography, conversation, and memory mapping. The information gained through these methods can inform the analysis and comprehension of the landscape through revealed perceptions and local knowledge.

In early December, 2012, I met with 18 people from seven different families, and one intern from Nature Conservancy of Canada who was familiar with our family's land due to a recent agreement for a conservation easement. One of those families (five people) was my own, and the others I had never interacted with previously. There were four people that did not partake in the mapping exercises

and are therefore not represented in the interview section. Valuable information gained from them through conversation is included in section 3.5.1 Local Knowledge. The land owned by those interviewed is outlined in Figure 39.

Prior to the interviews, I had three main assumptions about the way farmers, residents and visitors view and interact with land.

- 1) After studying the relatively short timeline of prairie settlement and the divisions created through the Dominion Land Surveys, I wondered if this consumptive nature was embedded within the farmers' mentality.
- 2) I thought farmers would have a very good understanding of the land through aerial view as they would probably utilize maps to know how much they can produce based on areas.
- 3) I thought that non-farming residents or visitors to the land would have a distorted understanding of the land in aerial view, but may better understand the land from an 'on the ground' perspective.

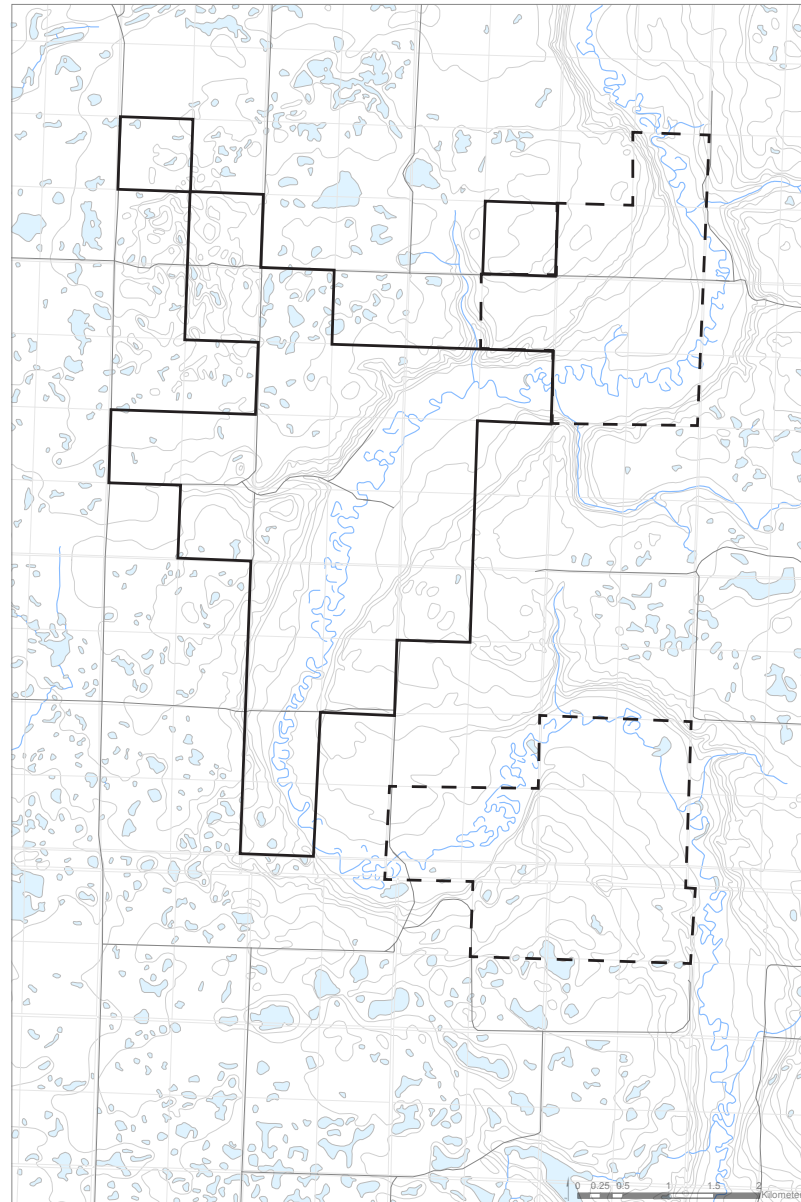
In addition to these assumptions, I had two main concerns about the proposed interviews;

1) I was about to ask farmers to draw maps, potentially paint, and discuss their feelings. Having known my grandpa who farmed the land with his relatively quiet and gentle but straightforward manner, I presumed this may be a difficult task.

2) I did not know if people would want to discuss their personal history and feelings with someone they had never met previously. I was concerned there would be confusion as to why I wanted to speak with them, especially since there was no intention for site design.

My initial assumptions and concerns were proven wrong with the very first interview. In fact, the first sentences spoken to me in that interview were words of encouragement towards my project and passionate thoughts towards the land. Every interview was similar in that matter. I am only able to present small fragments of the passionate thoughts expressed by the participants. I am grateful to those who provided me with insight towards agricultural practices and their optimism in what they do. My own personal perceptions of agriculture, which were mainly focused on environmental concerns prior to these discussions, have shifted greatly since learning from these passionate people.

Figure 39. Land owned by those interviewed.



Area covered by interviews

—— Interviews
(approx. 4000 acres)

- - - Interviews canceled

INTERVIEWS

3.1

I had intended to focus on how to plot one's perspective on a map to understand which graphic techniques related to and represented perception the best. However, I quickly realized in the interviews that there were no points to plot. In a land that is one's home, all is valuable and all is appreciated. Typically, no one area stood out, and this is where I switched from the desire to plot perception to the desire to reveal it. A small shift in wording but a huge shift in outcome.

As the intention was to reveal personal perceptions, I met with families individually to give each person equal opportunity to speak, and to avoid having their thoughts interrupted or influenced by others. Interviews ranged from 30 minutes to three hours. Various relationships to the Shell River Valley were represented by the people interviewed. In order to retain confidentiality, the following titles have been used to introduce each interviewee and their connection to the land, accompanied by the number of years they have had that particular connection:

Resident Farmer (currently living on and farming the land),

Resident (currently living on but not farming the land),

New Resident (moved to the land within the past few years, but not

farming the land),

Past Resident (once lived on but never farmed the land),

Frequent Visitor (visits at least once a year),

Visitor (less than 3 visits total), or

Land Owner (owns a section of land but does not live on or farm the land)

Some interviews involved two people, but have been presented as one for the purposes of simplicity.

Each interview was conducted in a specific order that will be discussed in this document following the presentation of individual interviews: cognitive map, pin-pointing location map, conversation, and at a later date, photo submission. Aside from this ordering, the interviews were rarely comparative as types of questions and wording of questions were adjusted to suit the path of conversation. Information provided by the interviewee are in quotations.

The cognitive maps vary from interview to interview with respect to the extent of land drawn. When participants asked what the cognitive map should include, I generally supported the first question posed. For example, if they first asked, "should I just draw the home quarter", I said "sure". If they first asked "should I draw all of the property I own", I

said "sure". The reason for this is that I was more interested in gaining a record of their initial thoughts rather than controlling the situation to standardize the interviews to make them comparative. The cognitive maps on the following pages have been presented in their original drawn orientation. Each cognitive map has been compared to an aerial image, not to understand accuracy, but to present differences that may lead to the realization of how people imagine the land.

Participants were asked to pin-point the location of their home on various maps with different base data as described in Figure 40. In most cases, location became more accurate as more information was revealed.

Each person interviewed was asked to submit a favourite photograph in or around the Shell River Valley. Due to the anonymous nature of the interviews, photography has not been sourced, but is understood to be provided by each individual participant with consent for reproduction in this document.

The following pages present ideas from ten participants that engaged in the methods presented above.

Figure 40. Layout key for interviews 1 - 10.

Participants were asked to mark the location of their home on the maps, beginning with map 1 through to map 5. Their mark is shown as a pink 'X'. Map 6 shows the actual location for comparative purposes.

- 1. River and streams*
- 2. Contour lines*
- 3. River, streams, lakes, contours*
- 4. River, streams, lakes, contours, section lines, roads*
- 5. Contours, lakes, Bing aerial image*



Photograph of the Shell River Valley or surrounding land submitted by participant.

Cognitive map produced by participant.

Satellite image of land to compare to cognitive map. White dashes represent the boundaries drawn in the cognitive maps (often the quarter section(s)). Scale has been excluded to increase confidentiality of location.

INTERVIEW - 1

**Frequent Visitor (12 years) +
Land Owner (17 years)
(29 years)**

LOCATION MAPS

This interviewee was unfamiliar with reading maps of the area. Marked locations are based on guesses rather than reading the maps. When the map of water bodies was presented, he tried to locate the pond that he knows to be on the property.

PHOTOGRAPH

Date taken: October, 2009.

Description of photo: *"Human's strive to reshape land for functionality. Nature lends ideas of beauty and design."*

Reason for choosing photo: *"The image captures the balance between the decline of human functionality and nature's ability to reclaim the land."*

COGNITIVE MAP

The map shows quarter section boundaries, a house, a bridge, roads, and a river. In comparison to the aerial, it is clear he views the land in terms of the road (which is in its location due to hills) and the river. This can be noticed as the section boundary lines are drawn perpendicular to these elements.

CONVERSATION

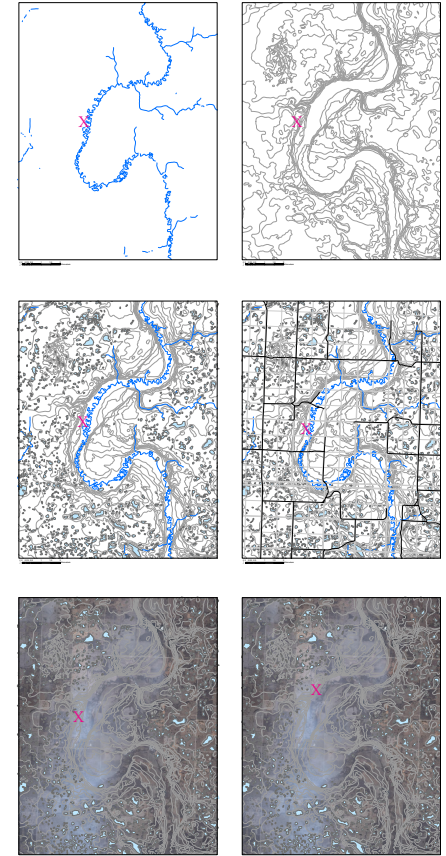
Are there areas you find yourself particularly attached to? *"I feel attached to all of it. A combination of landscape features and my ability to take photographs of the area, and on rare occasions, the animals. It's mostly*

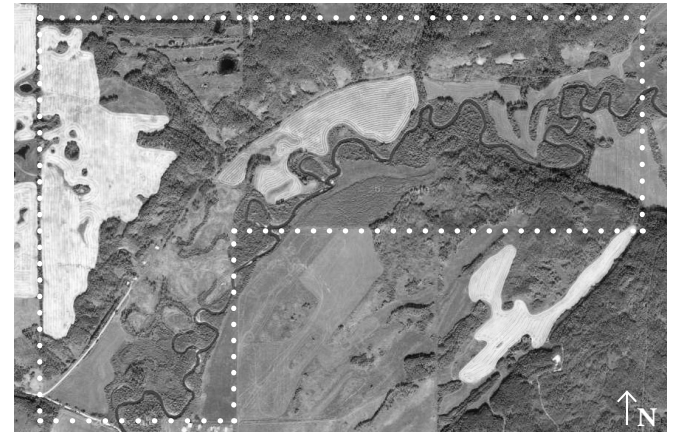
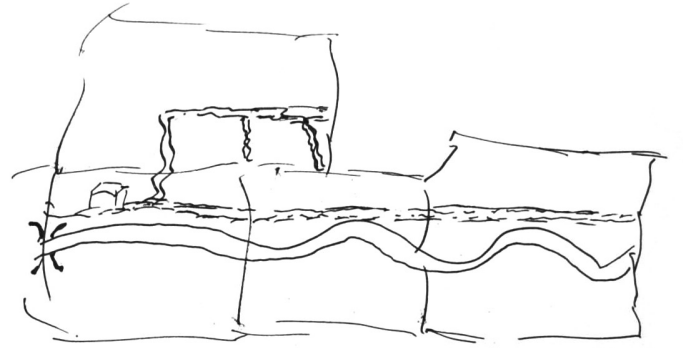
the topography of it. There is a variation going from the farmhouse down the road. Looking left and right, it changes. You have fields and hills, and trees and streams."

"The peacefulness out there, the air quality out there, and the ability to walk a fair distance without coming across too many human barriers. And very very little pollution or garbage. It is very pristine."

What changes have you noticed on the land over time? *"More so just the deterioration of the structures that were used at one time but no longer, are just falling apart."*

Are there specific memories that stand out to you? *"Building a tree fort up in the tree line, and walking across the river is always a challenge, and being aware and looking for, in a positive sense, any animals, like elk and such. The textures that you walk on, whether it be the field or in the trees or even on the dirt road. And always listening to things, because you can't always see things, but you listen for things that may be in the distance, and that's what piques one's interest."*





INTERVIEW - 2

**Resident
(40 years)**

LOCATION MAPS

The location marked was close to accurate on the very first map, and gradually became more accurate as details in the maps were revealed.

PHOTOGRAPH

Date taken: Spring, 2010.

Description of photo: *"Sunrise over the valley."*

Reason for choosing photo: *"On a clear or almost clear day, the morning greets me with its beauty and colour."*

COGNITIVE MAP

Drawn elements include trees, river, the spring, road, house, barn, and circles to represent hills. Emphasis is on the spring as it is the only element labeled. It is clear that the river and road stand out the most in terms of landscape features as the drawn section lines follow these elements.

CONVERSATION

How do you interact with the land today? *"Gardening, cutting grass, shoveling snow, walking, bird watching, getting water from the spring, bringing in water."*

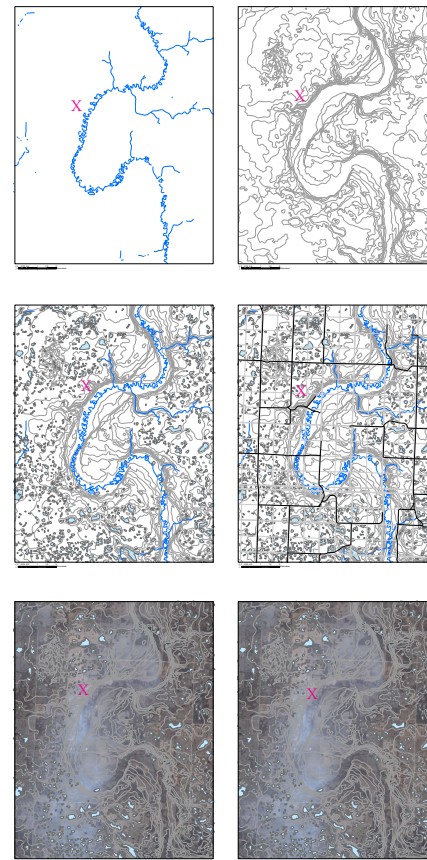
What is your connection with the valley? *"We came here to farm, make a living and raise pure bred Herefords. My husband wanted land with bush and did not want to grain farm because he did that with his dad his whole life and was*

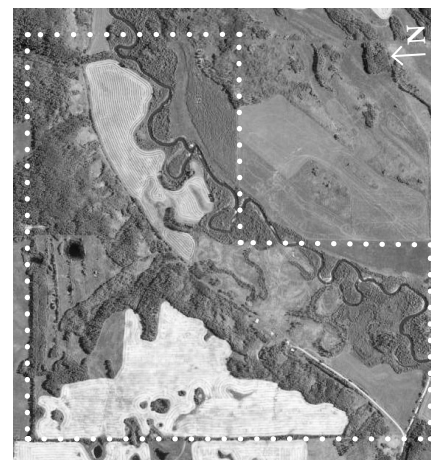
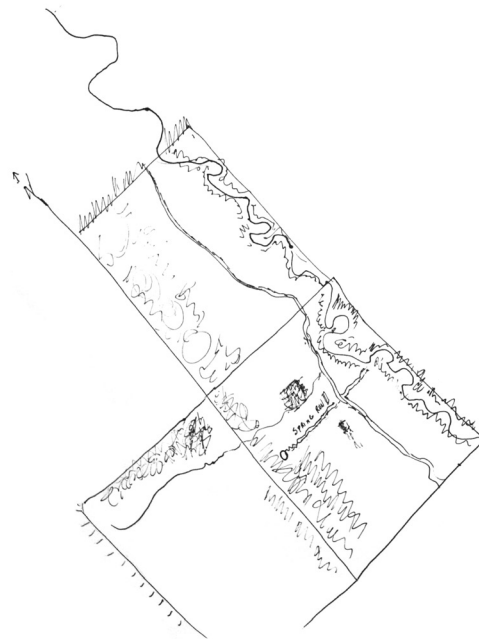
sick of it. He always wanted cattle as a kid. We have lived here since July 1st, 1973."

What are your perspectives of the valley today? *"Pretty, or picturesque. Spacious. Being half way up a hill, everything is hard to do. You always have to go up or down, and it is difficult when machinery gets stuck. But I still prefer this to lower or higher. You have to be patient in a valley. I love the spring and the water it provides. There is comfort knowing that even if there is no water anywhere else, there will be water here for awhile."*

How has living in the valley shaped your life? *"It has made me stronger, not in mind, but physically (laughter). When we first moved here, we didn't seem to have time to appreciate the beauty of it. I helped my husband in the morning, worked in town in the afternoon, and came home at night. Now, it's relaxing."*

What are your favourite places in the valley? *"On top of the hill where we used to have picnics. Most places we went for walks. Any place there is a spring going by because you can drink it."*





INTERVIEW - 3

**New Resident
(2 years)**

LOCATION MAPS

The points on the maps were decided by a group of family members. As more members helped, and as more detail in the maps was revealed, the location became more accurate.

PHOTOGRAPH

Date taken: August, 2013.

Description of photo: *"It's not a photo of my favourite spot but a photo from my favourite spot."*

Reason for choosing photo: *"It truly can't be captured but this spot is significant for me. Not so much what you see in the photo but from where it is taken."*

COGNITIVE MAP

The drawn map is quite accurate in terms of proportion and location of significant features such as the house and the river. It is likely that the vantage point from atop the valley contributes to this understanding. The orientation of the topography of the valley is the most notable difference between the drawn map and satellite image.

CONVERSATION

Why did you choose to live in this particular location? *"We do not have family history in the area or in agriculture. We wanted privacy and a view. We looked for four years till we found this property."*

Are there remnants of past structures on the land? *"At the east side of the quarter near the river there is an old basement from the old homestead. There are still traces of the old Merridale road, but it appears more like a path as the road has not been used for awhile."*

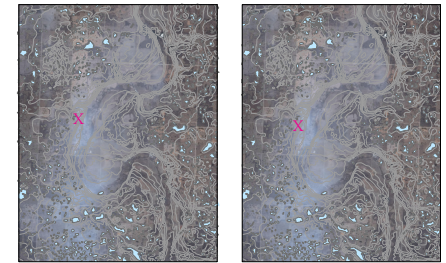
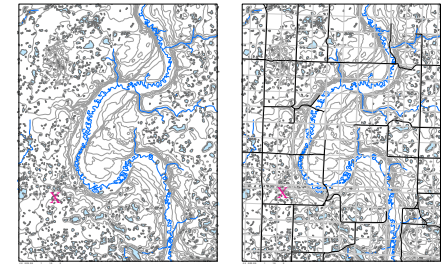
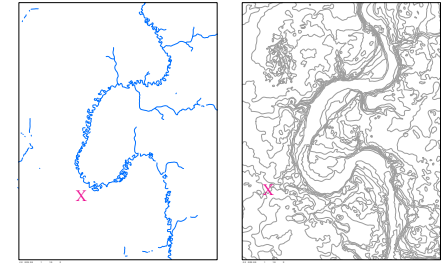
Are there any places you feel particularly connected to? *"Everywhere. Especially areas with a view down the valley. Everyone that comes to visit is amazed by the view."*

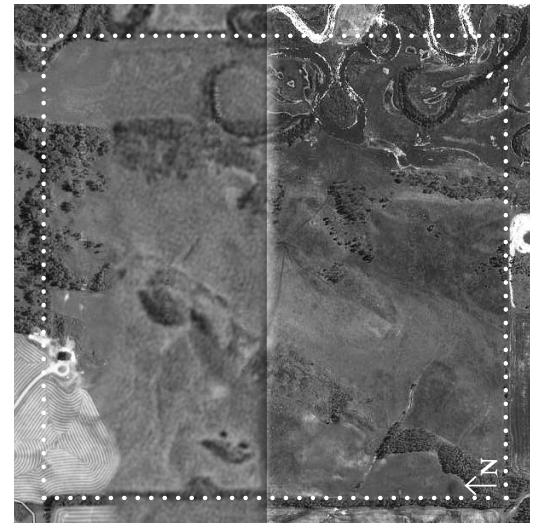
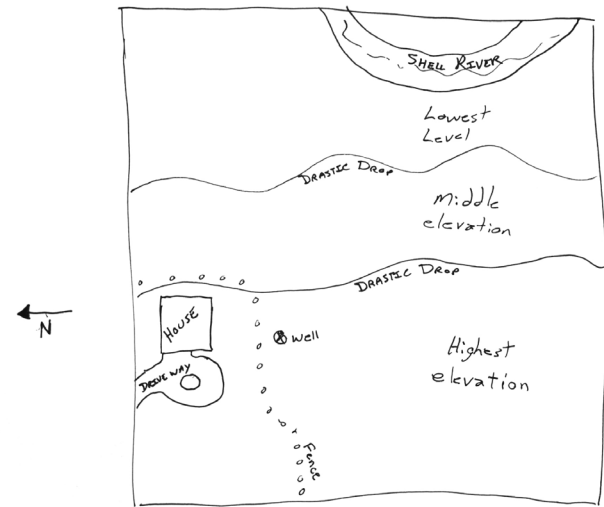
What do you use the land for?

"Walking and enjoyment. As a family, we make forts in the trees and toboggan down the hills."

Are there springs on the land? *"Maybe one spring, but possibly none. One area gets wet frequently. This may or may not be a spring."*

When you first came to the property, did you feel a connection to the land? *"I had an immediate connection to the land. I knew right away. The first time I drove out I knew it was the place for us. My wife took a while to warm up to the idea, but now feels a connection. We both find the land to be very beautiful and realize we are lucky to live where we do."*





INTERVIEW - 4

Visitor
(3 visits)

LOCATION MAPS

He was able to understand location once he saw the roads, valley and change in elevation through contour lines.

PHOTOGRAPH

Date taken: October, 2010.

Description of photo: *"A view from the side of a hill in the Shell River Valley."*

Reason for choosing photo: *"The view."*

COGNITIVE MAP

A relatively small area is depicted in the map of an interior portion of a quarter section. The drawing revolves around the house, roads, and pasture (the large box on the right). This is the area he is most familiar with. The rest of the land was expressed as foreign and un-mappable.

CONVERSATION

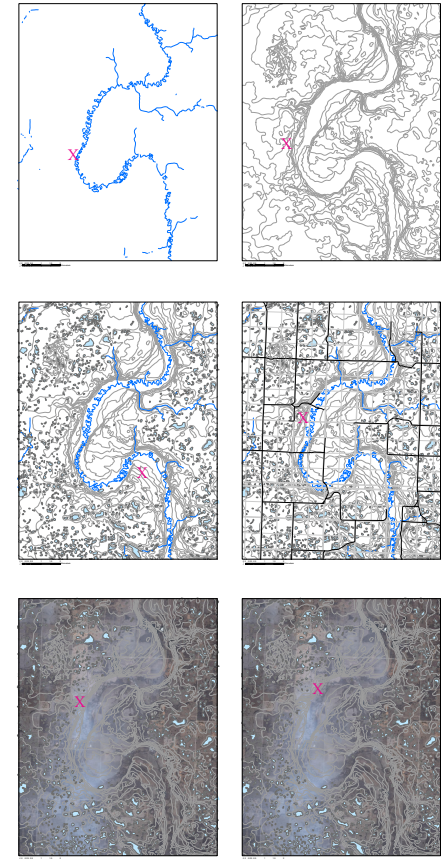
What do you appreciate about the land? *"The serenity, and I like the look of rolling hills. I like the view."*

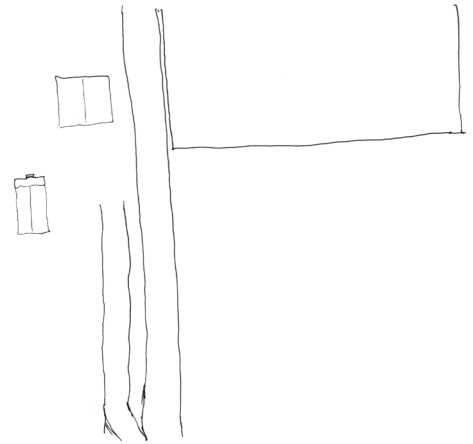
Do you have a favourite place on the land? *"No favourite place. Actually, that's not true. I find the areas around the livestock the most interesting. Being from the city, I never get to see livestock. I enjoy when we get up close to the cows. If there were other animals, I would appreciate the same thing."*

Do you feel an attachment to the land? *"I care about the land because the people I care about care about the land, but otherwise I personally have no attachment to it. It is beautiful, but I can see nice rivers and trees in the city. I can't see rolling hills in the city, so the landscape plays a part in it, but also what's in the landscape. The night sky is pretty wonderful too."*

Are there specific memories that stand out in your mind? *"Being around the cattle and climbing hills for the view. Another memory would be driving the truck down the road and sitting in the back of the truck. It lets us get somewhere a little faster, and we have more energy for horsing around when we get to our destination. I like the idea of farm trucks, ones you don't care much about and are totally for utility."*

Is there anything you see as a negative aspect? *"I like our city drinking water. You can't drink the water from the well, you have to drink from jugs. Also, you can easily get snowed in. I wouldn't like to be cut off like that. It is too far to walk anywhere."*





INTERVIEW - 5

Resident Farmer (66 years)

(one quarter section has been
in the family name for almost
100 years)

LOCATION MAPS

As more detail was revealed, he realized where Hwy 83 curved off, which aided geographic understanding. He used the section lines and roads to determine location.

PHOTOGRAPH

Date taken: 1992.

Description of photo: *"This photo gives a perspective on topography and water flow towards the valley from an aerial view."*

Reason for choosing photo: *"This was not considered a favourite but presents a change in landscape in and around the yard."*

COGNITIVE MAP

The map is quite accurate in terms of spatial location and proportion. He suggested mapping all of his land rather than just the home quarter as it is all part of the Shell River drainage basin. He requested to use a ruler.

CONVERSATION

Do you understand the land through an aerial perspective? *"I relate more through walking. I feel more connected when I have my feet on the ground."*

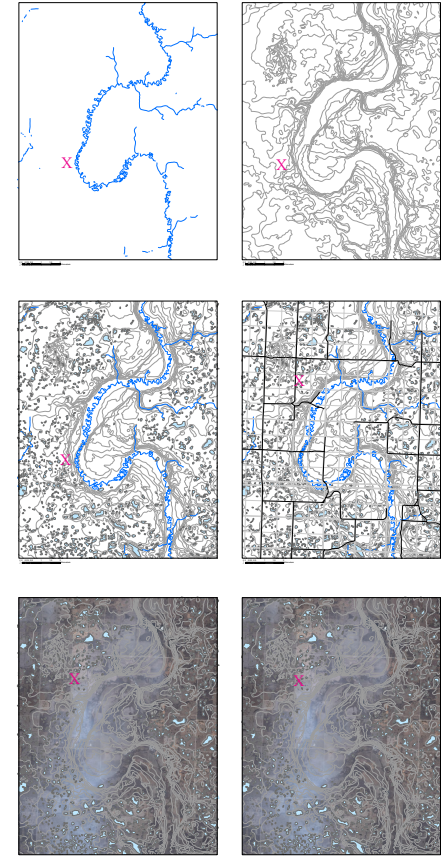
What do you appreciate about the land? *"I used to admire flat land around Winnipeg (because of the production value), but I am starting to gain a better appreciation of the valley land and the*

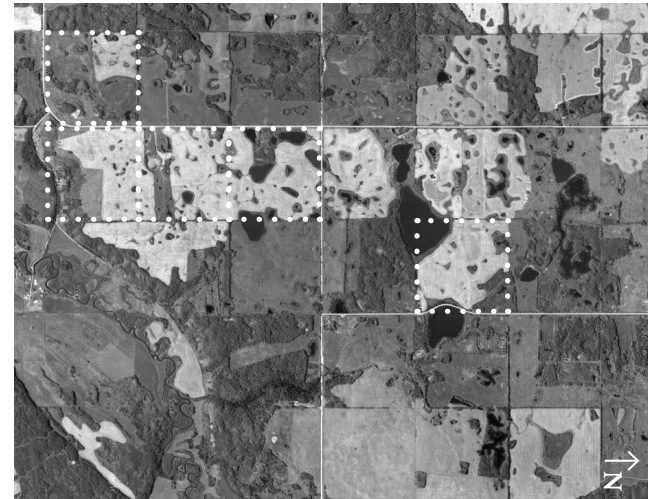
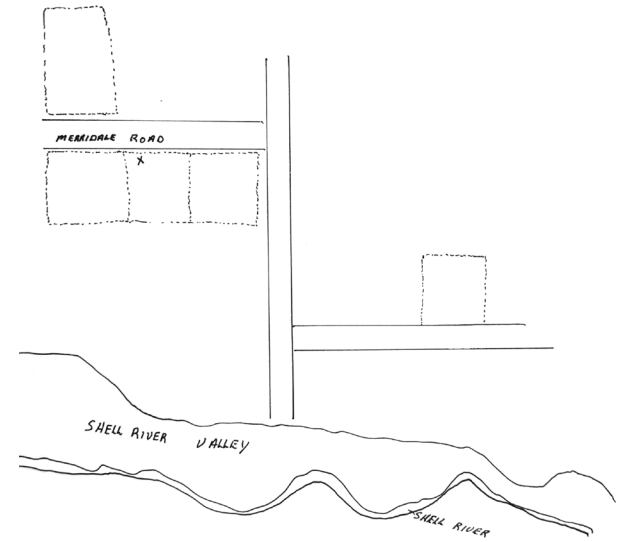
beauty of it. I never took appreciation of how peaceful and calm the valley is till a few years ago when visitors reminded me. I am realizing it could be a great place for people to come live, work or retire here."

What do you farm? *"I farm approximately 60% canola and 40% wheat. Canola has been around for 25-30 years, but is a relatively new crop, and is a big change from the past. Growing canola has been paying bills. I rotate the location of these crops each year."*

How have farming practices changed? *"There is evolution of change on the farm because we learn from the past. My dad was not for change, but I see value in making the farm efficient, and sometimes that is through change."*

"If you take care of the land it will take care of you. Learn to manage it. You need to manage your soils to make them productive. If you are taking out of the soil, you should be putting back in."





INTERVIEW - 6

**Past Resident (4 years) +
Frequent Visitor (19 years)+
Land Owner (17 years)
(40 years)**

LOCATION MAPS

The location was discovered on the very first map. There is a distinctive ravine that flows to the Shell River which acted as a geographically revealing element.

PHOTOGRAPH

Date taken: Summer, 1991.

Description of photo: "Pasture in the valley with trees surrounding the meandering Shell River."

Reason for choosing photo: "Love and respect of nature in the valley. Provides a peaceful, comforting and nurturing retreat to rejuvenate the soul."

COGNITIVE MAP

The map is quite detailed. The drawing order was as follows: river, road, house + yard (garden, caragana bushes, cat, open field), barn (gates, troughs, cow pens, bales), other quarter sections (spring, river crossing, spot on hill).

CONVERSATION

Could you comment on your attachment to the land? "I think I've become more attached to the land now that I'm not living there. It seems even more precious because we run out of time, meaning we're busy with life in the city, so it's sometimes hard to find time to go out there. When I used to live there, I didn't appreciate it, maybe because of my age. Now that I'm getting older, I'm wondering what will become of the

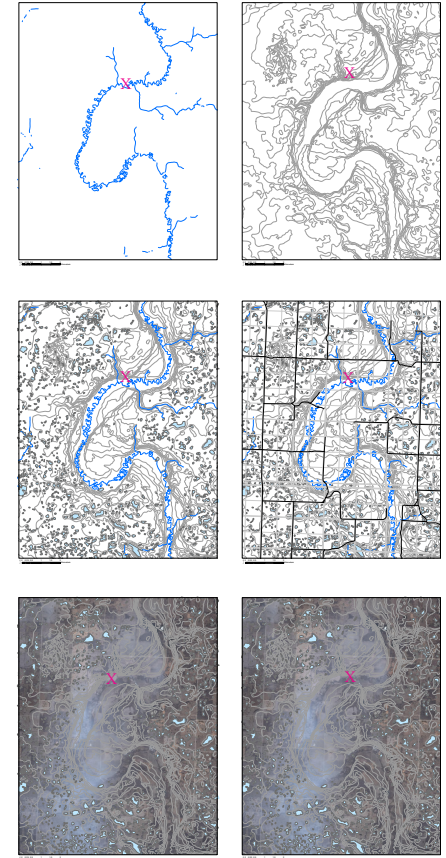
land. What are we going to do with it? I would like to live out there, but I don't think it's possible. It used to be a working farm. Now there are no cattle, so we would have to find ways to keep busy, or interact with the land."

How do you interact with the land today? "We bought a quarter section from my parents in 1996. We come out for recreation, walking, hiking, visiting. Other farmers harvest the hay land for us. We have restricted the use of fertilizers and pesticides because we are concerned about the effects on the river. We also limit cutting close to the river in an effort to stabilize the banks."

Why did you purchase the property? "The wild. It was wild and beautiful and scenic and it had spring water."

Would you like to see any changes on the land? "I'd like people to be more aware of the land owner's rights with regards to people entering on the property without approval."

What areas do you find to be the most enjoyable? "I enjoy the sunrise when you look out of the house, walking up the hill on to the field, walking down the road to our property and walking across the river is always fun. So it's everywhere."





INTERVIEW - 7

Frequent Visitor (25 years)

LOCATION MAPS

The contours and the roads helped her to understand location.

PHOTOGRAPH

Date taken: Winter, 2008.

Description of photo: *"On top of a hill in the Shell River Valley."*

Reason for choosing photo: *"A second home, a feeling of peace and serenity as the valley wraps you up in comfort."*

COGNITIVE MAP

The map is fairly accurate with some distortions in terms of the length of the road, as well as the orientation of the section boundaries. If the drawing is considered to not be bound by section lines, then the representation of the land can be seen to be more accurate. Elements were drawn in the following order: bottom left where the road splits, secondary roads, house, barn, hills, crop symbols, river.

CONVERSATION

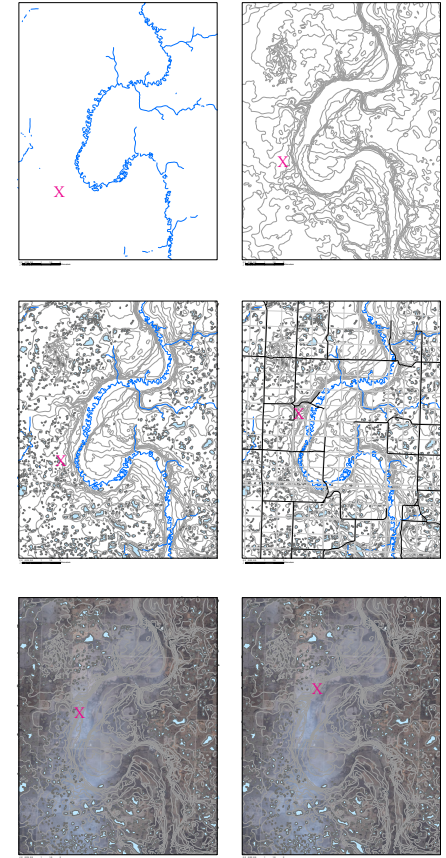
What do you like about the farm? *"It's relaxing and like a second home because we've been going there forever. Not valued for agriculture, but more so for recreation."*

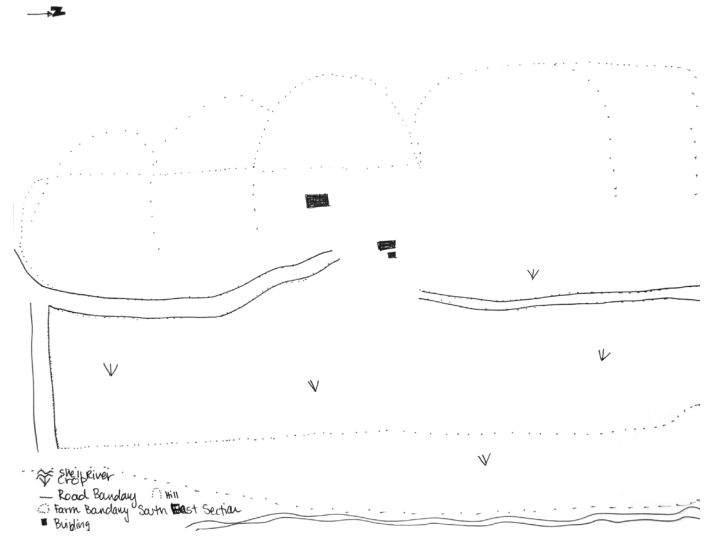
Do you have favourite spots on the land? *"Yes. In the open field on top of the hill, when you go up the road to the back of the house near the barn yard, and up that road. Another favourite spot is down*

the road where you first come in (see photo), up on that hill."

Are there specific memories that stand out in your mind? *"Helping my grandpa with the cattle, or just being out there when he was tending to them. Raspberry picking in the garden with grandma. Long walks in general and picnics. Making play houses in the caragana trees. And also that we could have 30 outdoor cats. In the city that's sort of illegal."*

You have a background in geology. Does anything geological stand out to you about the land? *"Yes. I like the different sands from the glacial deposits. Sand and till. Whenever there is a piece that is cross cut in the land I like to look at the rocks because that would be from the glacial period. I also notice erratic boulders on the land. This reminds me just how strong the glaciers were, to move these large boulders and deposit them across the land."*





INTERVIEW - 8

Resident Farmer (66 years)

(grandfather was an original homesteader in 1911)

LOCATION MAPS

The location marked shifted quite a bit until the map with roads was revealed, which assisted the indication of geographic location.

PHOTOGRAPH

Date taken: To be confirmed.

Description of photo: *"This picture displays where home has been for me, a lifetime, and for my wife, forty one years."*

Reason for choosing photo: *"It's home and home is where the heart is."*

COGNITIVE MAP

He requested to use a ruler. Before he drew, he consulted photographs of the homestead. He said, "how will I know how to draw the land if I don't look at the photos?" He made a few jokes about me drawing the map for him. In the end, he drew the map from his mind and included the acreage of various spaces, distinguishing between open, bush, and light bush. The map is quite accurate.

CONVERSATION

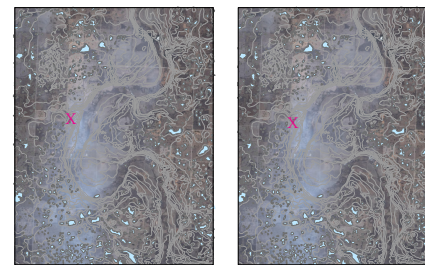
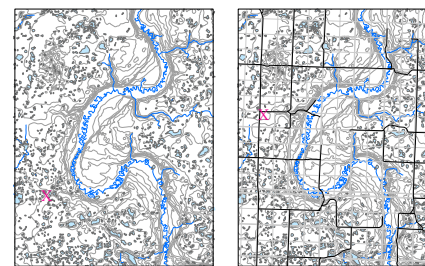
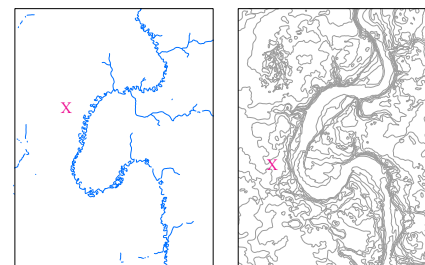
What is your farming history? *"My dad farmed with my grandpa, I farmed with my dad, and right now the next generation is 'on hold' (ie. no one will continue the farm as of now). We have always farmed livestock. We used to have hay land but the land is better for pasture. We rent hay land elsewhere."*

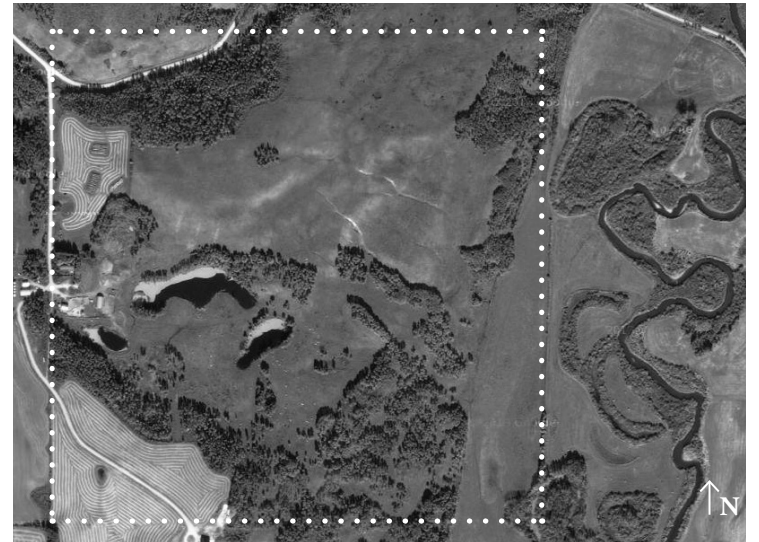
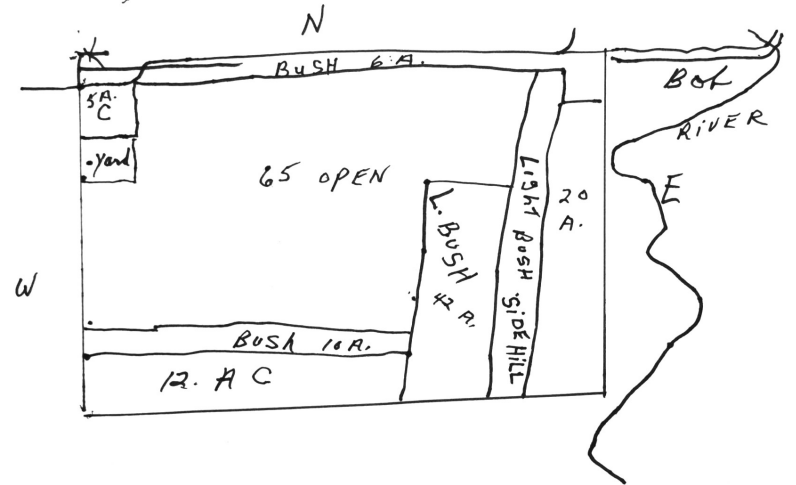
We used to have 95 cattle of Herefords, Black Angus, and Holsteins. Now we have 65 cattle of Charlets and Long cattle. We prefer these breeds. The market is better for them, they have a quieter temperament than Black Angus, and they gain weight better."

"We do mixed farming. You almost have to have mixed for a small farm. You have to have a lot of acres for wheat, so that wasn't an option for us. The land, with rolling hills, is suitable for mixed farming."

Do you have appreciation of certain areas over others? *"I feel appreciation for all areas. On top of the hill I can see the whole valley. We feel a very strong connection to the land."*

What would you say to future generations interested in farming? *"You have to have dedication and passion for the land, animals, and farming."*





INTERVIEW - 9

Resident Farmers (2 people)
(49 years + 19 years)

LOCATION MAPS

The location marked was almost exact from the beginning. The final aerial map unfortunately had cloud cover over the property, which added difficulty in determining location. The final mark was only a quarter section off from the actual location.

PHOTOGRAPH

Date taken: July, 2005.

Description of photo: *"My daughter saying goodbye to 'Popeye', the Canadian goose we raised from gosling. Took him down to the Shell River everyday, and finally one day he stayed and eventually flew away."*

Reason for choosing photo: *"Memories."*

COGNITIVE MAP

This map was drawn with much consideration. He used a ruler and was very conscious of the curves in the river. 'W' means willow. Tame grass means grass that he planted. Hills are representative. The proportions, locations, and details are incredibly accurate.

CONVERSATION

Why did your family settle here?

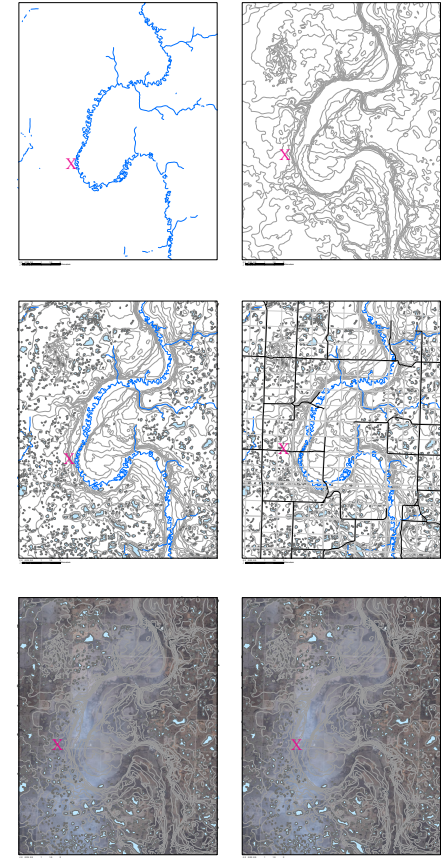
"When we came, there was bush, water, and stones. Dad loved cattle and knew it was a livestock farm. He knew it wasn't for crops. There was access to water, and with Dairy cattle, water intake is huge."

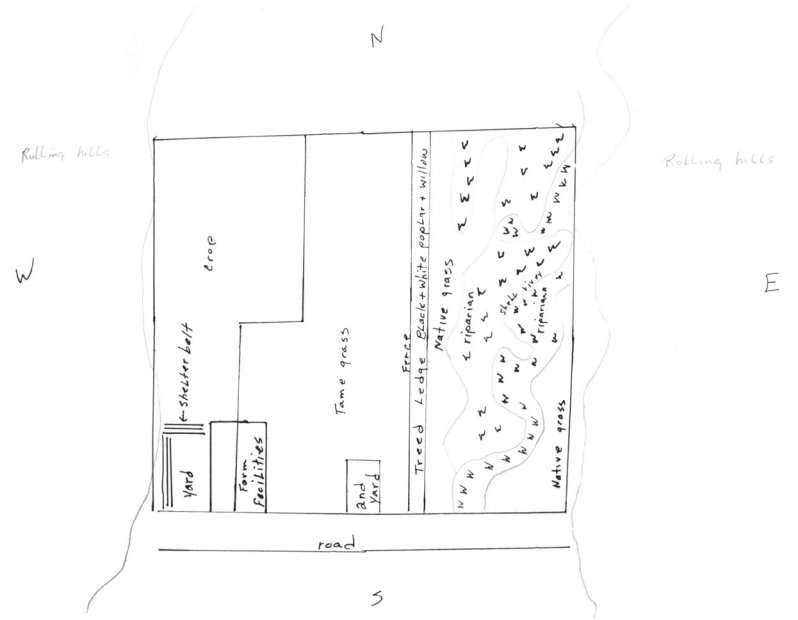
The land capacity was great for cattle."

What do you farm? *"We farm British beef cattle. We only keep enough cattle to facilitate the acres that are un-farmable. The cattle often use the willows along the river as protection from wind and for calving."*

Other than farming, what do you use the land for? *"We use the river for tubing. It takes about an hour to tube down a 3/4 section due to the winding river. The willows along the bank are huge. It is almost like going through the grand canyon. Sometimes cattle will pop their heads through the bushes. In the fall, wild cranberries are ripe along the edge of the river so you get the smell of cranberries as you travel down. There are beaches with very fine sand and small seashells. The beach locations shift over time."*

Is there any part of the land you love the most? *"I like walking through the bush and up through the cattle trails. But really, everything is different at different times of year and at different places, so it is more about the moments in these places rather than specific places themselves."*





INTERVIEW - 10

Visitor, Intern at Nature
Conservancy of Canada
(3 visits)

LOCATION MAPS

The roads provided geographic understanding of location.

PHOTOGRAPH

Date taken: Summer, 2012.

Description of photo: "Lynx tracks."

Reason for choosing photo: "Lynx are a very secretive animal and tracking them, especially in the summer time, is very difficult. Lynx require large connected mature forests. Finding them is an excellent indicator of good forest habitat. They are my favourite animal, and this is the closest I have ever been to finding one in the wild."

COGNITIVE MAP

The map is very accurate due to a familiarity through aerial and ground study. It shows four prairie hills. The first three are better for native species because they are less open. The last hill is more open and not as good for native species. The tame area includes smooth brome grass and weeds.

CONVERSATION

What is your involvement with the area? "The landowner granted the Nature Conservancy of Canada (NCC) Manitoba Region a Conservation Easement Agreement. We mapped the anthropogenic features, animals, and classified the vegetation communities. This particular land hosts an Aspen hardwood forest type and prairie that

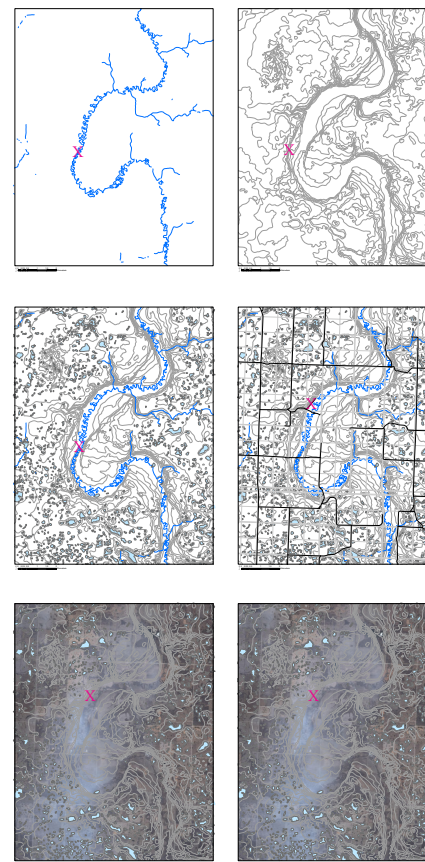
supports a provincially uncommon grass species. There are also tame grassland and cultivated fields. We grade the vegetation community types based on health to aid management practices. We try to find a balance between Conservation and Agriculture."

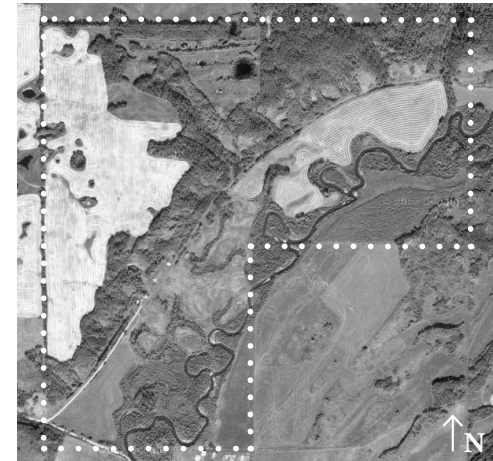
Does NCC allow livestock grazing?

"Yes, NCC allows grazing on Conservation Lands. Livestock grazing is an essential management tool and grazing at the appropriate stocking rates at certain times of the year may help the growth of native plant species. Conservation Agreements are written to allow the landowner to manage and use the land in a sustainable manner, while restricting the destruction of native habitat, including wetland drainage, prairie cultivation, and development."

What have you learned from the landowners? "The Landowners are very knowledgeable. They know the land and the area way more than we ever will. Local knowledge is essential in what we do."

Do you see any negative issues in the area? "In some areas, grazing is too close to the river, but I understand why as the river provides free access to water. For me, the biggest concern is wildlife movement. The landscape is fragmented. Fences, roads and development limit wildlife movement throughout the area."





UNDERSTANDING THROUGH COGNITIVE MAPPING

interview reflections

3.2

It is important to realize that “*most modern cognitive maps are liable to contamination from pre-existing cartographic knowledge*” (Andrews, 2009, p. 80). What we draw from memory may be, and probably is, influenced by other maps we have seen. For this reason, cognitive mapping was conducted at the beginning of the interviews in order to understand perceptions prior to external influence from other mapping strategies or conversations.

Beginning to draw on a blank piece of paper is not always easy. Requesting this of others was a reminder that although I may be familiar with drawing maps or expressing ideas in a graphic manner, many of the people I approached had not drawn in years. This was apparent by the reactions some people had to my request. A few people did not want to be involved in the mapping process. Others had questions about what to draw or how they should draw it. The uncertainties people had in some cases influenced what they drew. For example, many people only mapped the places that were familiar to them and the features that were familiar to represent in a graphic manner. The map reader must be cautious in the interpretation of these maps as the inclusion or exclusion of features may not always indicate what is known or

unknown, but rather, may be a result of the map makers ability to represent features graphically. This can lead to misinterpretations.

“A working country is hardly ever a landscape. The very idea of landscape implies separation and observation” (Williams, 1973, p. 120). Perceptions are influenced by one's familiarity with the land. The cognitive maps produced by the participants present this clearly, and as could be expected; those who farm or study the land exhibited a better grasp of spatial relationships than the visitors (Figure 41).

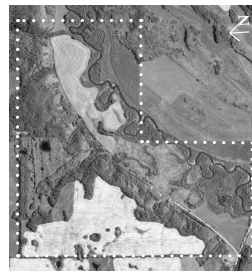
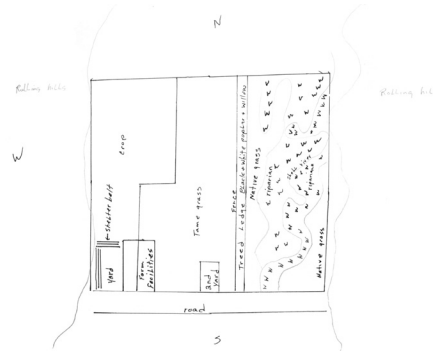
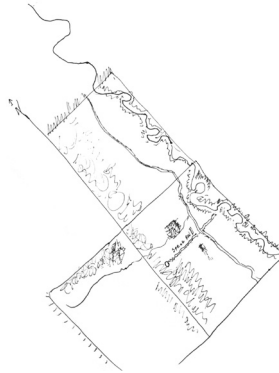
All of the farmers requested to use a ruler and considered the placement of elements within the landscape very carefully and accurately. The locations marked seemed to be considered based on relationships between landscape features and to the boundaries of the quarter sections. The quarter sections were the main frame of reference to plot other entities.

The visitors also used the quarter section boundaries as a frame of reference, but in a much different way. The boundaries were all drawn perpendicular and parallel to the main features in the landscape, whether that be the river, the hills, or the roads. In most cases, this was an inaccurate representation of the geographic

relationships between features and the section boundaries. This speaks to the visitors having a relationship with the scenic features more fully than the boundaries. It also suggests that the landscape of the valley itself plays into the perception of the space. If this study were conducted in an agricultural area with visually apparent boundaries due to fewer topographic shifts, would the visitors still imagine the land based on features rather than boundaries?

The images on the following pages represent the results of asking select participants to ‘draw the way you imagine the valley’ (Figure 42-46). The intended purpose of requesting this type of image was to understand the regional extents people thought of without restricting the vantage point of the drawing (ie. aerial vs perspective). The resulting images are very expressive. When compared to the participants' cognitive map produced during the interviews as a result of asking participants to ‘draw a map of the land’, there are clear differences even though both are cognitive maps. This comparison suggests that the term ‘map’ is commonly perceived as a representation in plan view and one that aims for accuracy, whereas the term ‘imagine’ is perceived to be much more free in its request and does not conform to plan view.

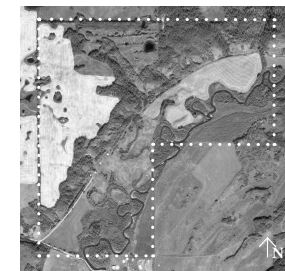
The 'map' maps pin-point human structures whereas the 'imagine' maps are generally devoid of this, except for the one that includes a farmhouse. This suggests the maps of the land that we produce based on our recollection of being in the space compared to the way we imagine the land to be as a whole, are different constructs, although they certainly influence each other. This confirms that the way a cognitive map is requested from a participant will change the outcome, and may even change the way one imagines the land to be. Landscape architects and other interviewers should be aware of this point when gaining information from other people through cognitive mapping. It may be best to ask for a variety of maps through the use of different questions to reveal a variety of information and ways of understanding the land.



*Resident + Visitors
-main features*



*Resident Farmer
-relationships between spaces*

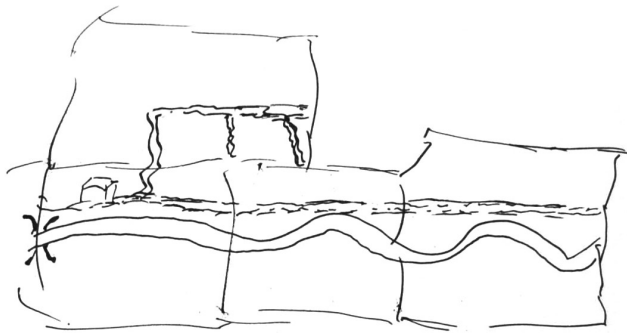


*Visitor / Intern at NCC
-aerial + GIS*

Figure 41. Comparison of features used for cognitive comprehension based on familiarity to the land.

“None of this is easy to understand. But good men, the really good men, could dream of more than animals. Sometimes they saw heaven and its trails. Those trails are hard to see, and few men have had such dreams. Even if they could see dream-trails to heaven, it is hard to explain them. You draw maps of the land, show everyone where to go. You explain the hills, the rivers, the trails from here to Hudson Hope, the roads. Maybe you make maps of where the hunters go and where the fish can be caught. That is not easy. But easier, for sure, than drawing out the trails to heaven. You may laugh at these maps of the trails to heaven, but they were done by the good men who had the heaven dream, who wanted to tell the truth. They worked hard on their truth.”

- from *Maps and Dreams* by Hugh Brody, 1992, p. 46

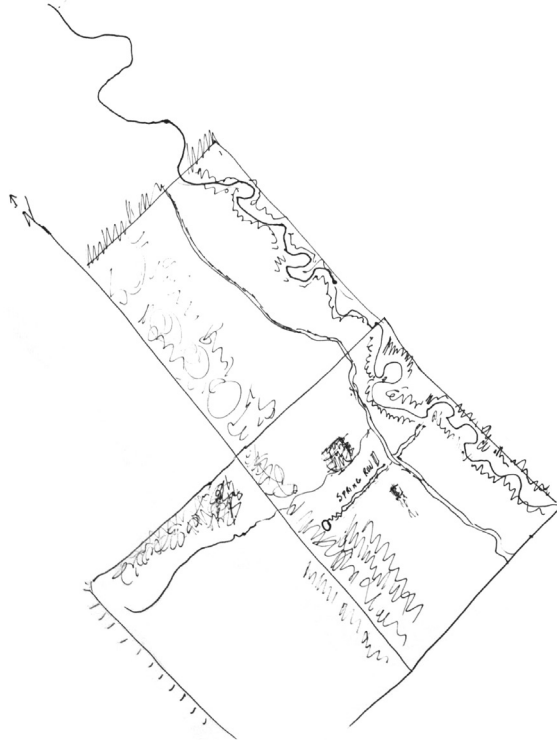


*Draw a **map** of the land*



*Draw how you **imagine** the land*

Figure 42. Interview #1. Comparison between the request 'draw a map of the land' and draw how you imagine the land.'
Description provided by interviewee of the right side map: The painting is of the valley from a high perspective, which consists of trees on the hill side, a river in the middle and some land suitable for the cultivation of crops. The yellow dots represent bailed crops after harvest time.

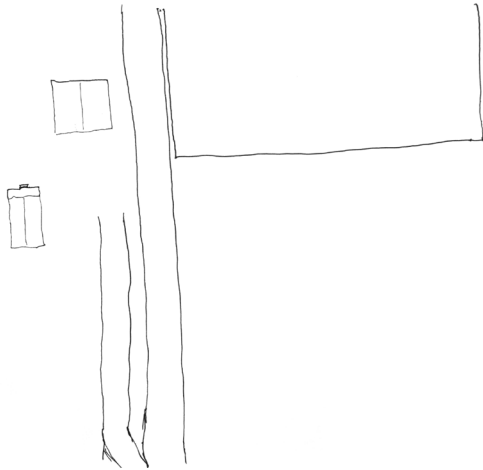


*Draw a **map** of the land*

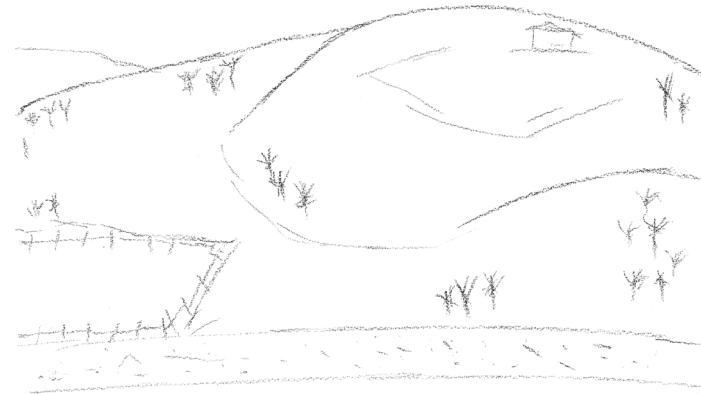


*Draw how you **imagine** the land*

Figure 43. Interview #2. Comparison between the request 'draw a map of the land' and draw how you imagine the land.'
Description provided by interviewee of the right side map: I drew the river first. I wanted to just draw the river with bush, but thought the painting needed more. I would have drawn an animal if I knew how.



*Draw a **map** of the land*

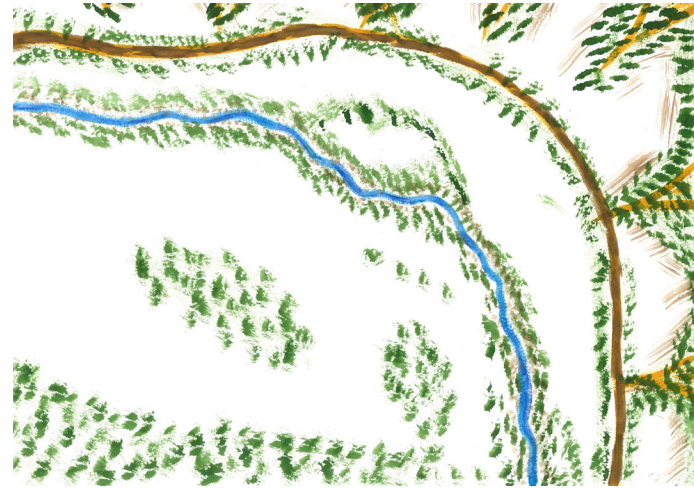


*Draw how you **imagine** the land*

Figure 44. Interview #4. Comparison between the request 'draw a map of the land' and draw how you imagine the land.'
Description provided by interviewee of the right side map: Looking out from the farmhouse. A place for cattle in the valley and some hills, a farmhouse in the distance, a road, and trees, pockets of trees.

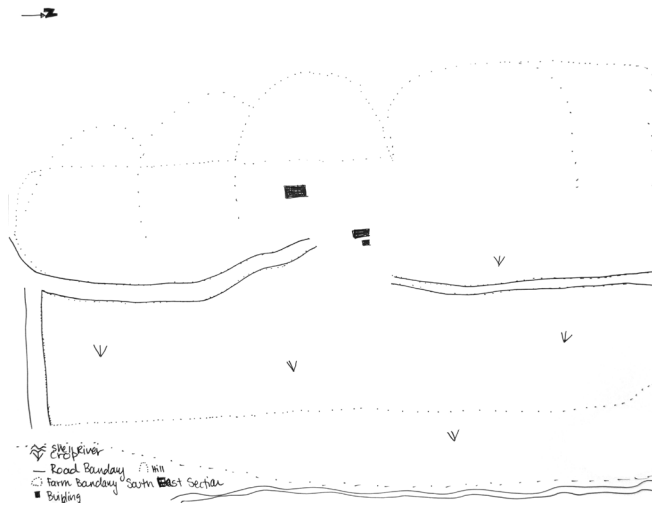


*Draw a **map** of the land*



*Draw how you **imagine** the land*

Figure 45. Interview #6. Comparison between the request 'draw a map of the land' and draw how you imagine the land.'
Description provided by interviewee of the right side map: Natural landscape in the Shell River Valley of hills, forest, river and grasses. Area for a quiet peaceful walk up the hills, through the forest then crossing the river.



*Draw a **map** of the land*



*Draw how you **imagine** the land*

Figure 46. Interview #7. Comparison between the request 'draw a map of the land' and draw how you imagine the land.'
Description provided by interviewee of the right side map: This painting is a reflection of my fondness of the shell river valley that has been developed over many years. The beautiful hills wrapping me up in comfort while feeling the sun shining on my face.

UNDERSTANDING THROUGH LOCATION

interview reflections

3.3

This method of understanding was designed to determine which cartographic elements people use for relating their position in space (Figure 47). The original intention of these maps was to reveal elements of the land that people were most familiar with (rivers, hills, roads, lakes, etc.), but that was not necessarily the case as these elements were better understood through direct interaction on the ground and not in aerial view. Instead, it showed who was familiar with reading maps or seeing the land from an aerial perspective, which is a valuable understanding to gain about who may have cartographic abilities and who may not. It can then be known who may require assistance in understanding what the maps portray. This mapping exercise was strategically conducted second in the interview to gain an understanding of interviewees' familiarity with maps, and to present the area in graphic form so they may be better prepared to discuss the land.

The accuracy of the participants' marked locations varied greatly and did not seem to relate to their relationship to the land. However, all of the people who farmed the land counted the quarter sections to determine location when that map was revealed.

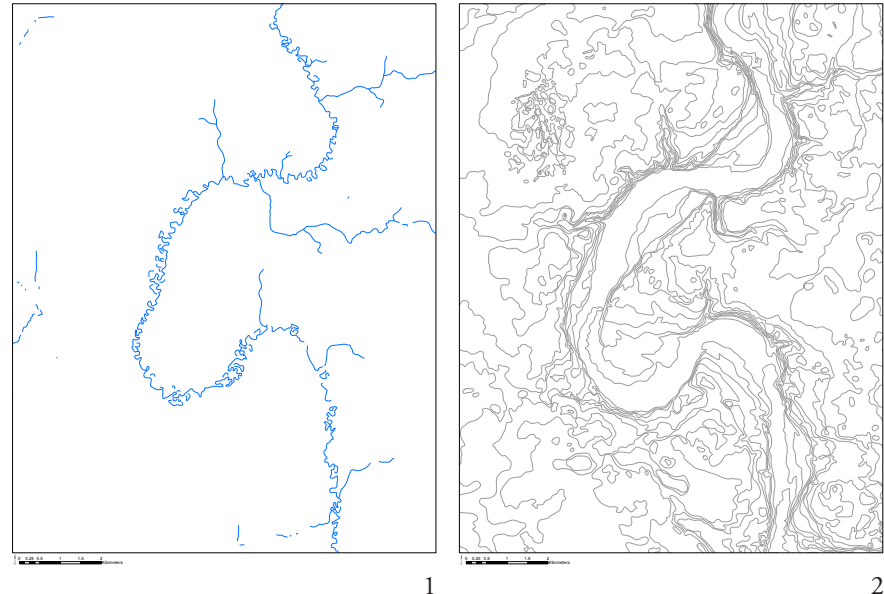
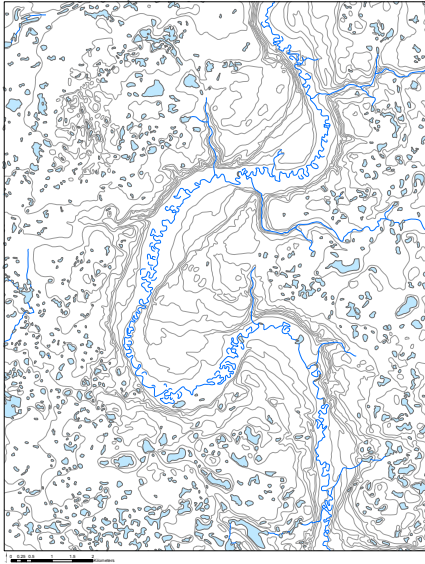
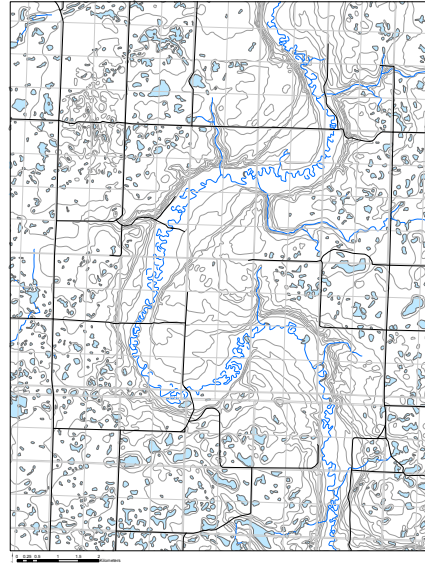


Figure 47. Base maps used during interview to request the interviewee to mark the location of their home.

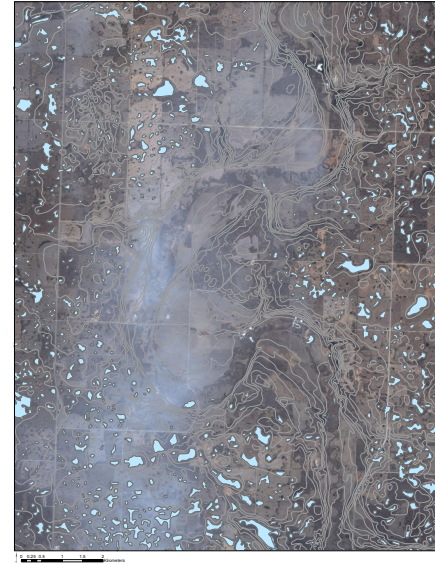
1. River and streams
2. Contour lines
3. River, streams, contours, lakes
4. River, streams, contours, lakes, section lines, roads
5. Contours, lakes, Bing aerial image



3



4



5

UNDERSTANDING THROUGH PHOTOGRAPHY

interview reflections

3.4

“Asking myself what I feel about the land and then trying to express these feelings in photographs limits the possibilities. It is more fruitful for me to first photograph, then ask this of the photographs” - Jeremy Addington (A Canadian Portrait, p. 114). This quote supports the value in reviewing previously taken photographs. In doing so, there is opportunity to choose from a variety of seasons, time of day, year, various subjects, an array of memories, vantage points and composition. It involves reflection of what has happened rather than searching for a specific quality to be captured through photography in the present moment.

Those interviewed were asked to submit an existing photograph of the area in or around the Shell River Valley, of any subject and of any date, as long as it was a personal favourite. The intention was to gain a collection of photographic representations to act as a collection of varying vantage points of the valley and to understand what makes a photo a favourite; whether it be subject, view, composition, memory, narrative, or a combination of factors. Is there a comparison between what makes a photo a favourite and what that particular person feels attachment to in the landscape?

The first intention was satisfied as the

collection does act as a representation of the various aspects of the land. The second intention to understand what makes a photo a favourite and if that relates to personal attachment to the land was much more difficult to assess. It is fairly simple to analyze the photograph and the accompanying text in terms of main themes. Each photo could be assessed for dominant characteristics, generally fitting into one of the following categories; view, relationships with the land and species, and agricultural. However, assessing what this means to people is much more difficult. The individuals interviewed probably have several favourite images that represent different categories within their photographic collection. Therefore, based on the photographs received for this study, it was not reasonable to judge what one feels most attached to from a single image, but it does serve to reveal part of a perception.

The text accompanying the photographs may be the most revealing as it becomes clear that the photograph is representing something much more than a moment. It is representing a memory with a description that is generally quite expressive as to the qualitative feelings of the people explaining the photograph. This is useful for the purposes of site analysis as *“an image of ‘where’ brings back a*

recollection of ‘who’ and ‘what’” (Downs & Stea, 1977, p. 27). It could also be said that a recollection of who and what brings back a recollection of where. In either scenario, aspects of site are remembered in addition to the memories that occurred in those spaces. This is essential for understanding perception and for gaining insight into the land.

Figure 48 is a personal favourite photograph of mine, although the single photograph cannot convey all of my preferences towards the land and the experiences it offers. It is one of many favourites.

Figure 48. Within the Shell River Valley. October 2010.



UNDERSTANDING THROUGH CONVERSATION

interview reflections

3.5.0

Some elements are difficult to map for reasons of precious quality such as a memory, or for reasons of human inability to translate a thought into a graphically or geographically constrained item. Conversations about relationships to the land were necessary to obtain knowledge that could not be conveyed easily through cartographic strategies. My realization of this came during a test interview with my grandma and mother. I asked them to record their responses to my questions through mapping, and to continue to map throughout our entire conversation. It did not take long for both the interviewer and interviewees to become frustrated with the process. For one, the length of time it took to map responses to simple questions was considerably longer than a verbal response, and the cartographic product from mapping everything imaginable created a map that was in conflict with every cartographic teaching; maps should have purpose. The resulting map was not directed at presenting a specific goal and was confusing to read. This made me realize that I was applying my own bias of a desire for a mapped outcome, when it was not necessary to gain an understanding in this way. Although some information could certainly be obtained from the map, it was not worth the frustration that resulted. Conversation was suitable for this purpose.

For some people, the discussion of personal feelings towards land, or towards anything for that matter, can be a difficult task. The mapping of tangible spaces and activities that was conducted at the beginning of the interview was intended to facilitate an easier process of discussing feelings about these spaces and activities in the latter part of the interview. The mapping acted as a tool to start thinking about the land in a tangible way, opening one's mind to remember experiences one had on the land, and moving towards a much more conceptual discussion.

An advantage of speaking with people in the Shell River Valley is that many of the land owners are related to the original homesteading families of the early twentieth century. With this connection, the current farming families can provide much knowledge about the land and farming practices and how things have changed over time. The understanding of this history helps to explain their connections with the land and why they do what they do.

As the families currently on the land have ties to original settlement, the Dominion Land Surveys Township Plans were of great value to study prior to the interviews. The grid provides a structure of ownership that also assists

in understanding spatial relationships. Most people described relationships or directions between spaces in terms of the names of past and present land owners. If I did not have a good idea of the township plans, both historical and current, I would have been unable to understand many of the places discussed in the interviews.

Participants provided insights to their local knowledge, which has greatly influenced my understanding of agricultural practices. I admire the passion they have towards the land and agriculture and am grateful for their willingness to express these thoughts to me. A small portion of their abundant knowledge is presented in the following pages.

“Many of the original homesteaders were from Ukraine, including my father. They had little land in the old country. Parks were owned by rich people. When people came to this area and saw all the trees, they thought, “this is for me”? They did not consider whether it was good for cattle or crops, and overlooked the fact they would have to clear all the rocks. They had all the trees.”

-Past Farmer Interviewee, 93 years old

LOCAL KNOWLEDGE FROM INTERVIEWS

3.5.1

The following is a compilation of ideas arranged by topic from various interviewees with a farming background, both those who participated in the mapping exercises and four people who did not.

The first topic in relation to **issues in the headwaters of the Shell River in the Duck Mountains** was brought up by every farmer without my prompting. This indicates that it is a subject well discussed in the community, it is necessary to have this type of understanding of the land in order to farm it well, and those farming the land have a regional understanding of where the water is coming from, going to, and what happens in between. This supports the high quality of information that can be gained from conversation for the purposes of site analysis.

The four questions following this were prompted by myself. They are as follows.

Have you noticed changes in water quality in the Shell River Valley? The answer to this question varied; the water is worse, the water is the same, the water is better.

How have things changed on the farm? This question provided responses that help to understand how

technologies have changed life on the farm and how this may affect one's perception of and interaction with the land.

Would you suggest farming to future generations? This answer also varied quite a bit. Some do not suggest it at all, others do not have family carrying on the farming tradition but not due to a suggestion one way or the other, and some have family that are currently involved and plan to continue farming. The majority of people I spoke with will not have any family member taking over the farm when they retire. This suggests there may be a significant shift in residents in the valley over the next 20 years. It is impossible to predict what relationships and ideas for land use newcomers may bring, but it is likely that some values will be different without generational ties to the land.

Do you think there are misconceptions about farming, and if so, what would you want people with these misconceptions to understand? Of all the questions, this one was most connected to emotion and the responses were perhaps the best indication of the passion people have for the land.

Issues in the headwaters of the Shell River in the Duck Mountains.

"The Conservation District has tried to understand water quality based on agriculture but they didn't look into dead wood and deer droppings in the Duck Mountains which is where the Shell River comes from. These elements certainly contribute to water quality."

"The valley is starting to get overrun by elk. The beaver population is destroying wood in the park and the result is damage to crops. Growing up, we had less animals. I'm not sure if this is because of less people or protection of species in the park. Now, all of the land in the provincial park that used to be used by elk for winter land has been flooded (some by the beavers). Elk are forced to move to better habitat down the valley, and also into farmers' fields. Where there is food, they will go."

"There is a lot of erosion on the river banks. This has a lot to do with logging in the Duck Mountains. It makes water run quicker. What makes this worse is when they blow out the beaver dams, which creates major washouts. When the ground is frozen, this is not an issue. When the ground is thawed, this is a big issue. They cut the trees in the forest, the permafrost thaws quicker, which makes the ground thaw earlier."

Have you noticed changes in water quality in the Shell River Valley?

"The river is more polluted now. Likely fertilizers and chemicals. But more of this is from what's going into crops and not from cattle."

"The area is good for spring water. Springs sometimes pop up out of nowhere. There is a lot of well water, but most of it is no good. Too much iron or the well goes dry. The well water can come back. It all depends on the water table."

"Washout of the river. It is getting wider due to the blow out of dams at Child's Lake. It is also due to farmers draining the land and not letting water sit on the land (the prairie pothole issue). If there is a fast thaw in the spring, look out."

"We don't let livestock use the lower basin when there is flooding or high water. There is no bank damage from the cattle because we don't let them out there until July when it is drier. We keep them on high ground till the water leaves. This way, the cows don't get sore feet and the bank and water are better for it too. The grass gets that growing period without trampling."

"We used to swim in the river and drink the water. I would still drink it today, but I wouldn't drink it in August and

September when the water table goes down and the water hardly moves. We used to cook, bathe, and do laundry with the river water. It was the best laundry. The water would get murky after a storm and would sometimes have silt in it, but otherwise it was good. There does not seem to be a difference in water quality. The water is clear and you can still see the bottom. Sometimes we'll see a spring feeding in at points along the bank, so we know it is being supplied with fresh water. The whole valley is sand and gravel, so it is the best filter for water, if you allow the land to do what it needs.

We now have a well. The water from the river is still good, but it is a bit too far and is too much work to get water from."

"I think the water quality of the river has improved. It's hard to know what's happening upstream, but I think it's better. My dad didn't keep the cows out of the river back then. When we first got there, we didn't think about how the cows would affect the river. They needed the river to drink."

How have things changed on the farm?

"Many of the original homesteaders were from Ukraine, including my father. They had little land in the old country. Parks were owned by rich people. When people came to this area and saw all the trees, they thought, 'this is for me'? They did

not consider whether it was good for cattle or crops, and overlooked the fact they would have to clear all the rocks. They had all the trees."

"We had pigs at the beginning for a year. Cattle, then commercial cattle, then when we moved here we had purebred Herefords. All the money earned went directly to the cattle. We had eight hens. They laid an egg a day for a couple of years, then switched to chickens for eating, only about 25, had them until 'I smartened up'. We sold eggs to buy a rototiller."

"Every Sunday we would go down to the valley to bathe in the river. The boys were in their birthday suits and the girls were in their petticoats (not near each other)."

"We lived in the valley from 1956-1968. Now we live in town. I do not miss the farm. It was a lot of work."

"Today, there are environmental programs that assist with understanding soil and where fertilizer is needed. The farmer engages with a company that analyzes satellite imagery, confirms analysis on site by testing the soil, and then creates a map that indicates where fertilizer is needed. This map is then programmed into our machines. The use of this technology reduces excess application of fertilizer. You have to open your mind to new technology."

LOCAL KNOWLEDGE FROM INTERVIEWS

(cont.)

“There used to be a different farm on every quarter section. Neighbours were a lot closer. The community was a lot tighter. We needed help from others to work the land.”

“Dad was, what you would call now, an organic farmer. Tillage was excessive. This is bad for an area with steep topography. There is normally 4” of topsoil. I just did a dug out that had 8” topsoil. We have gone from conventional tillage (quite a bit) to minimum tillage. The soil structure is getting better. We used to use summer fallow (planted every second year so that plant material has a chance to rot and break down to fertilize the soil). Now we have access to fertilizer and can plant every year.”

“We are able to get from the land everything we need to feed the cattle. It’s the way you have to do it. It is too expensive to buy from other farmers.”

“We now send our seed to a plant near by (in Yorkton) rather than sending to port. This saves us money.”

“We buy certified seed, treat the seed, and drill for optimum germination. Seed placement (depth) is a huge factor of getting a good crop. Machines help accomplish that. The soil can change in the valley within a couple 100 metres. The seeding tool gives the ability to have capability of reaching the same goals as

on flat land.”

“From bad luck to bad head. There are so many policies and other hoops you have to go through now to be a farmer.”

“We did not want to go for walks on the farm back then. We walked enough behind the plow.”

“Water erosion is a big issue in a valley. One of my fence posts was buried in topsoil. Wind erosion exists but is less of an issue than water erosion.”

“Many farmers still farm like my dad. They use summer fallow which is bad for erosion. This doesn’t mean what I am doing is right. It is just what I am comfortable with. With tillage you lose moisture.”

“The former Soviet Union was the only customer that bought wheat from my dad. Today, they grow wheat and are competing against us. South America now has cultivated lands. Their area for agriculture is greater than all of Manitoba agricultural land. The market has changed with the Canadian Wheat Board. My grandfather didn’t know prices for six months. Now we can get numbers immediately. Today, we hire a company that gives direction with markets and acts as a consultant. You need many parties for a successful farm today.”

“We used to farm livestock. We do not any more because we didn’t have enough to make it sustainable.”

“Genetically Modified Organisms (GMO’s) have given us a tool to reduce the use of herbicides. GMO canola is a herbicide tolerant seed. One herbicide can take care of a broad spectrum of weeds. We used to use 3-4 different herbicides. Almost every farmer grows GMO canola.”

“Stooking was not enjoyable. We used to cut grain with a binder. We used to use horses, and eventually got a tractor. One person on the tractor, one person on the binder. We tied the wheat in sheaves, stook them to dry, and then took them to the thrashing machine. We would do this for days and days, as long as it didn’t rain. Dad did this for 28 days straight. He had sore hands from clenching. This was common practice until combines.”

“In the past, the neighbours would help each other more. It felt more like a community. Saturday night used to be a big thing when people would get together because everything was closed on Sunday for a day of rest. Now, people don’t get out as much, and they don’t need help from each other as much due to machines.”

“My dad would have let the cows near the water because there was a lack of

waterholes. Because of this, the cows would sometimes fall through the ice, which is a big issue. We would have to get the tractor and pull them out."

Would you suggest farming to future generations?

"If you like the country and you didn't want to make money..... but no, I guess I wouldn't suggest it in this land. It is best as a cattle place. It is a land to live on and work in town. I also wouldn't suggest it on a different piece of land. Machinery is too expensive. You can buy a whole piece of land for the price of a combine. Although we loved the cattle and would do anything for them, we did not suggest farming to our children."

"Our son farms and is passionate about farming. He has friends who farm which is a good incentive."

"Our children are not farming at the present time and we are not hoping for them to be farmers. They make more money not farming than we ever did farming."

"You need a love for it. There are so many commercial farms. If you don't inherit a farm, it is much too expensive to start up a new one now. But I wouldn't change it for the world. It is a part of me."

What would you want people who are unfamiliar with farming and farming practices to know?

"We are producing pretty cheap food. 50% of our success is based on weather and markets which is beyond our control. Only 6% of the price a consumer pays for a loaf of bread goes to the farmer."

"When you look at the statistics, agricultural lands and the City of Winnipeg are almost equal contributors of nutrient loading (specifically nitrogen). That is millions of acres of agricultural land versus a small amount of land for the City of Winnipeg, both contributing similar amounts."

"I would like to see more education about farming and farming challenges. We do it because we love it. I like the challenges. Whether it's a valley or flat, agricultural land all has value that we need to appreciate. Optimism is a huge part. You don't see anyone surviving in agriculture without optimism. If we can produce a bit extra, that is where the optimism lies."

"I am offended that some would think we're abusing what we love. You don't have to tell us to look after it. We respect the river and the land around it. We use the land for our family and would never harm the land. We know a lot of people in the valley and they police it very well."

"They would never allow others to drop a septic tank off in the water, or toss a dead carcass in the river. If anyone was caught doing this, they would not get away with it. We built our home here and like being close to the river, so we try to reduce erosion. We would not cut back willows because we know this would create erosion. We realize the blessing we have."

"I think the respect for the land wouldn't be there if you didn't have a connection with it. Appreciating your surroundings. The wildlife, the water, the hills, the view, how quiet it is ... I don't think people in the city understand what we mean by quiet. They have their own version of quiet. It's a different quiet. There are people who have said they couldn't handle the quiet. They love the noise and the busyness of the city. Not everybody though."

"In the old days, the people who were in charge of land planning and policy making came from the farm or used to be farmers. This was much better because you had someone who understood."

UNDERSTANDING THROUGH MEMORIES

post interview

3.6

It is suggested in *Maps in Those Days* by Andrews that a purist may consider mapping through script to be anti-cartographic as it cannot provide a quick understanding of a represented area (p. 311). One must spend time reading in order to gain comprehension, and language can become a barrier if the reader is not fluent in the language on the map. However, there are certainly instances when text can contribute greatly, especially when conducting mapping exercises with people who may not be cartographically inclined. When discussing attachment to the land, most people are able to write or speak about their feelings, while less people understand how to draw their feelings.

This method of understanding through memories was designed in the post-interview phase after coming to the realization that it is not possible to map all types of data. Or at least it is not possible in a small time period with people who are unfamiliar with using abstracted graphics to represent emotions, feelings, or memories. Attempting to do so can add unnecessary frustration to the interview process or preoccupy the participant in focusing too much on how to represent rather than focusing on what to represent. For the purposes of this practicum, it was more fruitful to focus on the latter.

As a focus on the information (memories) was desired, a base map was provided so that the participants could focus on recording their memories rather than having to divert their attention to mapping the features of the land. The base map stimulated memories as spatial cues in the represented landscape allowed participants to connect their memories to place and vice versa (Figures 49-51). The map was designed to have minimal detail with only the features that seemed to provide the most indication of geographical location as realized from the previous interviews. These were realized to be the river, roads, human structures and vegetation. The river was drawn in a brown tone with a slight luminosity in the pigment. This colour does not reflect water clarity, but rather the colour of the clay river bed. The roads were drawn as thin black lines, with solid lines representing paved roads, and dashed lines representing unpaved roads. Human structures were marked with an 'X', and vegetation was painted using grasses from the site as the paint brush. This created a texture more indicative of the texture on site.

As this strategy of mapping was conducted after the interviews, I asked my own family members to contribute handwritten text to the base map of the land. The results were

quite personal and showed densities of memories in certain locations, which relates to intensity of interaction with the land. This is a valuable tool for designers working with communities to understand densities of land use. I found through the previous interviews that it was difficult for people to respond to questions such as 'where is your favourite place on the land'? This was difficult to answer as there were too many favourite places to choose from. Writing down memories in relation to a geographic location can potentially assist in bringing these subconscious thoughts to the forefront and reveal landscape preferences.

The memory map, without my prompting, got people writing about sensory elements such as emotions, sounds, and smells, emphasizing the point that script can be useful in gaining these types of understandings.

The sharing of memories amongst others offers an insight into varying perceptions and appreciation for the land. Understanding what others see as valuable can open one's mind to aspects they may have never thought of, and foster appreciation and respect for the land.

Figure 49. Memory Map. Original size 42" x 24". Canvas and paint. Those with relationship to this particular geographical space were asked to contribute memories written in text at the locations the memories occurred.



Conclusion

CONCLUSION

This practicum took on an exploratory approach that allowed the structure to remain flexible and shift throughout the process. What was initially meant to be a practicum about experimenting with mapping styles has developed into an interest in revealing perception and involving other people through interviews. This was due to the nature of maps themselves and the cartographic literature that supports them. Maps inherently represent human perception and are valuable tools for understanding and revealing human relationships to the land. This practicum provides examples of the misconceptions that can occur when a map is read without consideration for biases. The way a map maker believes the land to be will be embedded in the mapped representation of the land. This may sway the map to be more factual or more imaginary. Misconceptions can occur when the map reader perceives these factual and/or imaginary maps to be actual. The increasing accuracy of cartography in a geographical sense as presented by the general cartographic timeline in Chapter One has added to the perception of the map as actual. All maps are representations.

In the discipline of landscape architecture, maps are used on a daily basis for the purposes of analysis, process and communication. As such,

it should be considered a responsibility of the landscape architect to have an understanding of the implications these tools possess. This is not only of use when analyzing or creating maps from an office or studio setting, but also, and perhaps more importantly, when requesting information through mapping by other people who may not have cartographic knowledge. The designer should first understand his/her own biases to reduce influencing the perceptions of those they may be requesting mapped knowledge from (see Chapter Two). As presented in Chapter Three, something as subtle as the language used in the request of a map can affect the resulting product. The designer should be well aware of the ways in which mapping represents biases, both by the map maker and the map user, so that these biases do not affect the resulting design in a negative way.

Landscape architecture addresses how people relate to and use the land. In an interview setting, the designer should have an understanding of which types of maps may assist people in revealing different types of information. Using a variety of mapping styles to assist conversation has proven beneficial in gaining a diversity of information, both quantitative and qualitative, to better understand the Shell River Valley and human relationships to it.

The findings in this practicum are very subtle, but they have changed the way I understand the land, through my own and others perceptions based on methods of cartography. Following are the main conclusions discovered through this practicum, arranged by Chapter.

ONE.

|| Cartography is embedded with and also within human perceptions. The creation of a map is filtered through the understanding of the map maker, and the reading of a map is filtered through the understanding of the map reader. By the time the information reaches the map reader, it is possible that there will be misconceptions if the maps have not been created and read in a conscious manner. If the way we understand the land and our position within it is influenced by cartography, then it is necessary for map makers and map readers (and often a landscape architect is both) to understand the implications of biases within cartography.

TWO.

|| Designers should be aware of their own perceptions and how this may influence their design decisions. Familiar and unfamiliar aspects of a site can be understood through

photographic methods by contrasting familiar thoughts against measured datums. This aids in revealing human perceptions of the land and acts as a method of site inventory.

THREE.

|| The mapping of tangible spaces and activities that was conducted at the beginning of the interview facilitated an easier process of discussing feelings about these spaces and activities in the latter part of the interview. The mapping acted as a tool to start thinking about the land in a tangible way, opening one's mind to remember experiences had on the land, and moving towards a much more conceptual discussion.

|| Cartographic intelligence is not a reflection of one's understanding of the land.

|| People will map what is familiar in terms of elements on or of the land, and in terms of what is familiar to represent graphically.

|| When approaching an agrarian community for input into site analysis, the designer should become familiar with Township Plans listing ownership, (both the original Dominion Land Survey and the current ownership map) as resident's understanding of

the valley is often described in terms of relationship to quarter section ownership.

|| The cognitive maps created in the interviews revealed that an understanding of spatial relationships was quite similar within the context of different groups of people. Farmers understood the land based on their intimate relationship to the various elements within the area, but related them to direction and the quarter section grids. Their maps were quite accurate. The map produced by the intern at the Nature Conservancy of Canada was also very accurate, but as only three visits were made to the site, this is based on studying maps of the area rather than an intimate relationship to the land at ground level. If additional information had not been provided about the creators of the maps, the intern could have easily been mistaken for a resident farmer solely based on accuracy of the cognitive map. This is a clear example of how misconceptions about the map makers relationship to the land can occur. The visitors generally related the land to features in the landscape which dictated the orientation of the quarter section boundaries.

|| The language used to request a cognitive map from a participant can influence the result of the map. The

term 'map' may produce a plan view locating human structures whereas the term 'imagine' may produce a perspective view devoid of structures.

|| Landscape architects require spatial data for site analysis, but not all types of information are readily mapped by those who may not have familiarity with cartographic techniques. Conversation and mapping with text should be considered to supplement cognitive or location based mapping.

|| Many of the farmers interviewed have a long family history with the land, including connections to original homesteaders. The conversations conducted in the interviews revealed that many of the current farming families do not have a next generation to continue farming. Ownership of land within the Shell River Valley is likely to change quite a bit within the next 20 years.

- - -

CONCLUSION

(cont.)

As stated within the first line of the Preface, my underlying interests are in environmental conservation. My interests are typically focused toward the scientific structure of a site and ecological issues with the use of design for mitigation. However, I now understand the importance of human perception to the concept of conservation. Beginning with the site visits to northern Manitoba and ending with the site visits and interviews in the Shell River Valley, the greatest aspect I have understood is the passion and general good intentions that people in these areas have for the land. If there is passion, there is likely an interest in protection. The methods to pursue protection will vary depending on personal relationships to the land. Cartography can act as a tool to reveal these perceptions to begin conversations within the initial phases of site analysis.

Figure 52. The Shell River Valley.



All figures were created by the author unless otherwise noted, except for maps and images provided by interviewed participants. Due to confidentiality, the participants cannot be credited, but are gratefully thanked for their contributions.

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Thank you Grandma.