Exploring the Links Between Individual and Social Learning in the Red River Floodway Environmental Assessment

By

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A thesis submitted to the Faculty of Graduate Studies
in partial fulfillment for the degree requirements of

MASTER OF NATURAL RESOURCES MANAGEMENT

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THE UNIVERSITY OF MANITOBA

FACULTY OF GRADUATE STUDIES
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Abstract

In general, top-down expert-driven resource management approaches have proven to be ineffective when applied to problems that embody a high degree of complexity, uncertainty, and conflict. In Canada, and elsewhere in the world, there is a heightened level of interest in alternative resource management strategies and practices. The incorporation of meaningful public involvement and social learning opportunities is particularly important in resource management situations that run the risk of affecting various stakeholders. This research investigated the linkages between individual and social learning in the context of public involvement in environmental assessment (EA). The Red River Floodway EA provided an appropriate setting to investigate this issue in the general context of management for sustainability. Effective public involvement in EA can ensure that the project outcome reflects the values and interests of the communities involved.

Two groups were identified based on their involvement in the Floodway expansion EA. The Coalition for Flood Protection North of the Floodway (CFPN) is loosely structured, informal, and not very well funded. The Cooks Creek Conservation District (CCCD) is reasonably funded, highly formal, and well connected to the municipal and provincial governments. The research methods of this study were guided by the assumptions of a qualitative case-study approach. Face-to-face interviews, using open-ended questions, were the primary source of data.

Public involvement in EA provides an excellent opportunity for community organizations to engage in social learning about resource management activities that may potentially affect the natural environment and surrounding communities. Several factors contributed to the social learning outcomes that were achieved by the CFPN and CCCD. Both groups were transparent in their decision-making and idea-sharing processes. Furthermore, both the CFPN and CCCD possessed strong leadership within their organizations. Finally, both groups effectively documented their activities and provided opportunities for members to engage in dialogue throughout the EA process.

The evidence from this study suggests that doing an analysis of organizations participating in EA adds value and understanding to public involvement and how it is structured. It also adds value to understanding the communications and dynamics of groups participating in public involvement processes. Furthermore, this research recognizes the importance of identifying and addressing possible impediments to social learning in community organizations. Organizations that engage in social learning effectively will be capable of making informed decisions which may contribute to their success in public involvement forums.

Acknowledgements

The completion of this thesis would not have been possible without the overwhelming support of several key people.

I would like to thank my supervisor, Dr. Alan Diduck of the University of Winnipeg, for his motivation and guidance throughout this project. His patience and enthusiasm enabled me to overcome various obstacles on route to completing this thesis.

Thanks to Dr. Bruce Mitchell of the University of Waterloo for his valuable feedback and support. Thanks to Dr. Geoff Smith of the University of Manitoba for encouragement and insight during this research and my time on campus. Thanks to Dr. John Sinclair of the University of Manitoba for introducing me to this project and for providing valuable advice. Finally, I would like to express my gratitude to the staff at the Natural Resources Institute for their kindness and generosity.

I also thank the Social Sciences and Humanities Research Council of Canada (SSHRC) for financial support.

Above all, I thank my family and friends for their unconditional support. Sincere and special appreciation goes to my mother, Joanna, for her love and encouragement throughout this research.

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Chapter 1

Introduction

1.1 Background

Natural resource managers and decision makers are increasingly facing problems characterized by a high degree of complexity, uncertainty and conflict (Blatner et al., 2001; Mitchell, 2002; Blann et al., 2003; Diduck, 2004). Conventional resource management approaches have often failed to respond effectively to these types of problems (Cardinal and Day, 1998; Ludwig, 2001; Mitchell, 2002). Top-down, expert-driven management strategies have had limited success when applied to resource management practices or developments that affect various stakeholders and public interest groups (Ludwig, 2001). Currently, there is a heightened level of interest in alternative resource management strategies and practices.

In Manitoba and across Canada, various individuals and organizations are playing important roles in resource management decision-making processes. Environmental assessment (EA) at both provincial and federal levels provides opportunities for public involvement prior to any final decisions regarding proposed projects. Public involvement helps to ensure that the needs of the community are taken into consideration, while actualizing the principles of democracy (Gibson, 1993; Mitchell, 2002; Fitzpatrick and Sinclair, 2003). EA also provides an important opportunity for individuals and community groups to engage in learning (Webler et al., 1995; Saarikoski, 2000; Sinclair et al., 2002; Diduck and Mitchell, 2003).

Learning is a significant aspect of public involvement in resource management decision making. In particular, it is of vital importance for community groups to utilize public involvement opportunities in an effective manner to learn about development initiatives that may affect their well-being and seek out plans that promote sustainable resource management. In addition, organizations that are knowledgeable of management processes and related public involvement opportunities are in a better position to influence decision making.

Social learning approaches are increasingly being recognized by the resource management profession as holding potential for contributing to sustainable management practices (Parson and Clark, 1995; Alexander, 1999; Diduck, 2004). Social learning, as it applies to my research, is defined as learning by social groups or collectives (Parson and Clark, 1995). The EA of the Red River Floodway expansion provided an opportunity to explore important social learning issues. The focus of my research was concerned with the connections between individual and social learning. Moreover, the Floodway expansion EA provided an opportunity to investigate this issue in the general context of management for sustainability.

My rationale for investigating these issues was based on the following factors:

- my study will contribute to current research on social learning in EA, an emerging literature receiving considerable attention by academics and practitioners;
- the case study involved diverse and interesting learning opportunities (e.g., open-houses, workshops, and hearings);

- various organizations were participating in the EA;
- an organization that is able to obtain and process the knowledge of each individual member effectively will be better informed, thus leading to participation in EA that is both meaningful and of high value to decision makers; and,
- EA is inherently anticipatory and preventative in nature, and is targeted towards achieving sustainable outcomes.

1.2 Purpose and Objectives

This research investigated the linkages between individual and social learning in the context of public involvement in EA. The objectives were to:

1. identify what key individuals learned through their participation in the Floodway expansion EA;
2. identify what their groups learned;
3. describe the gap, if any, between what was learned by the individuals and what was learned by the groups;
4. explain barriers within organizations that may prevent or discourage mutual learning among individuals and their group;
5. develop a framework that seeks to explain how social learning contributes to meaningful public involvement; and,
6. provide recommendations on how to encourage social learning and improve public involvement in EA.

1.3 Methods

My research methods were guided by a qualitative case study approach. Two groups were identified based on their involvement in the Floodway expansion EA. The Coalition for Flood Protection North of the Floodway (CFPN) organization was established in 1999 by concerned citizens living along the Red River, north of Winnipeg (Figure 1). This organization is loosely structured, informal, and not very well funded. The Cooks Creek Conservation District (CCCD) was formed in 1979, to conduct conservation and resource management activities in an area immediately east of Winnipeg (Figure 1). This organization is reasonably funded, highly formal, and well connected to the municipal and provincial governments.

A literature review was conducted on social learning and public participation in EA. The main data collection techniques were a document review of government reports, newspaper articles, and records from non-governmental reports, interviews with EA participants, and observation of public meetings, open houses, and EA hearings. An examination of the data was performed using a qualitative analytical software package called NVivo 2.0.

1.3.1 The Red River Basin

The geographic study area is located in the Red River basin (Figure 1). The basin is prone to flooding on a regular basis. Spring flood events are common when there is heavy precipitation the previous fall, hard and deep frost prior to snowfall, substantial snowfall, sudden thaws, and heavy spring rainfall.

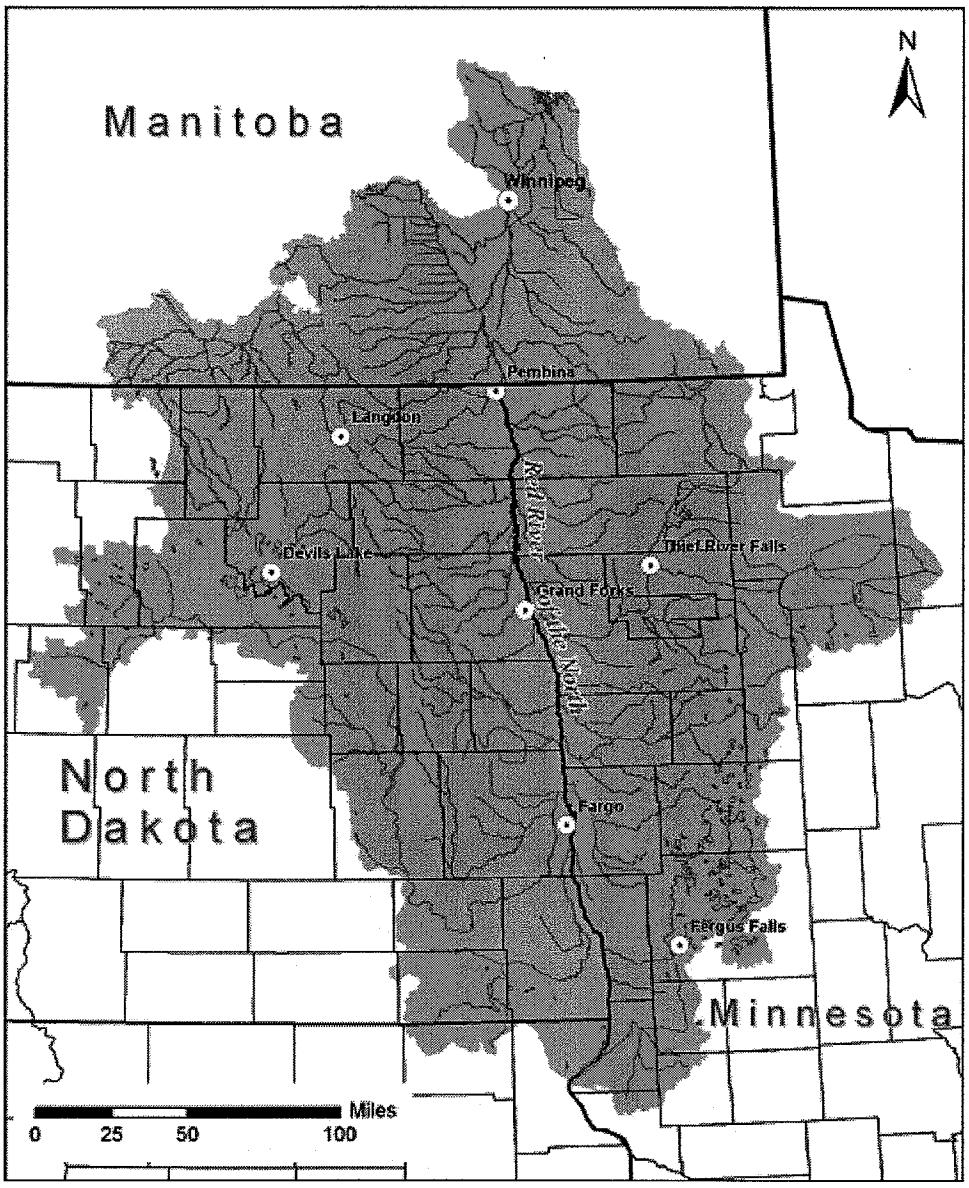

Figure 1 - The Red River Basin (Source: University of North Dakota, 2005)

The Red River is a large meandering river that originates in parts of Minnesota and North Dakota and flows north through southern Manitoba to an outlet at Lake Winnipeg. Throughout the Red River basin, the topography is relatively flat and the soil is fertile as a result of past glaciation (International Joint Commission [IJC], 2000). Excluding the Assiniboine River which joins the Red River at Winnipeg, the Red River basin covers

116,500 square kilometers and occupies a large amount of North Dakota, northeastern Minnesota, southern Manitoba, and a tiny portion of South Dakota (IJC, 2000).

The Red River basin is an area of relatively low relief. The vertical drop in elevation is only 70 meters over a distance of about 872 kilometers. The average slope of the river is about 0.15 meters per 1.6 kilometers (IJC, 2000). During a major flood event, water overflows the banks of the river and inundates the entire floodplain (IJC, 2000). The climate of the Red River basin is sub-humid/humid continental. Extreme temperature changes are experienced from season to season. Winters are frigidly cold, while summers are moderately warm. Daily fluctuations in temperature can also be extreme. Average yearly precipitation is approximately 500 millimeters, with the bulk of it occurring in late spring and summer (IJC, 2000).

Flooding in the Red River basin has been documented on many occasions throughout the nineteenth and twentieth centuries. Most flooding occurs after there has been heavy precipitation the previous fall, hard and deep frost prior to snowfall, substantial snowfall, sudden thaws, or heavy rainfall during spring break-up (IJC, 2000). The most notable Red River flood events in Canadian history occurred in the years 1776, 1826, 1852, 1861, 1916, 1950, 1979, and 1997 (Bumsted, 1997). The flood of 1826 is the largest of the floods on record. Contributing factors included: heavy precipitation, a sudden spring thaw, and ice jams on the river (Bumsted, 1997). In summary, the most influential factors contributing to flooding of the Red River basin include:

- gentle sloping landscape;
- low soil permeability;
- long/cold winters with high precipitation;
- saturation of soil prior to fall freeze-up;
- sudden spring thaw;
- ice jams within the river system;
- spring snow storms; and,
- land use practices

The people at highest risk of flooding are in both rural and urban settlements (IJC, 1997; IJC, 2000). Population density varies from just a few hundred people per square kilometer, to thousands of people per square kilometer (IJC, 2000). The largest population clusters in the United States are located in the Fargo/Moorhead and Grand Forks/East Grand Forks urban nodes. However, the largest urban population of the floodplain is located in Winnipeg, Manitoba at the junction of the Red and Assiniboine Rivers.

Flood protection measures implemented by both the Canadian and American governments have focused on a combination of structural and non-structural measures (Morris-Oswald et al. 1999). Of notable mention is the flood of 1950 which marked the beginning of financial contributions by Canadian provincial and federal governments for the purpose of flood relief restoration (Bumsted, 1997). The flood of 1950 was also significant because it initiated the development of large-scale structural flood prevention

measures. The most notable of these projects were the Red River Floodway, Portage Diversion, and the Shellmouth Dam (Emergency Preparedness Canada [EPC], 1999). The Red River Floodway is a large excavated channel, constructed for the purpose of diverting water around the city of Winnipeg.

The Floodway has been used on several occasions since it was completed as a form of flood protection for residents located within Winnipeg (EPC, 1999). Of particular note was the flood of 1969. The Floodway succeeded in preventing flooding in Winnipeg, but residents located just south of the Floodway inlet claimed to have suffered worsened flooding because of the operation of the Floodway (EPC, 1999). This event added to the continuing conflict over perceived inequities of protection between Winnipeg residents and non-residents that still persists today (Morris-Oswald et al. 1999).

The flood of 1997 was significant because it tested the Floodway to its absolute limits (IJC, 2000; Kontzamamiz-Graumann-Smith-Macmillan Incorporated [KGS], 2000). For the most part, the Floodway succeeded in preventing any major flooding to the City of Winnipeg, but the structure just barely held back the floodwaters. It became apparent to the authorities responsible for flood management that there was a need for measures to increase the level of protection for residents of Manitoba. The governments of Canada and the United States asked the International Joint Commission (IJC) to conduct research concerning the causes of the flooding and recommend ways to reduce the impacts of major floods (IJC, 2000). The IJC established the Red River Basin Task Force to

undertake a number of studies related to flood risks in the basin and possible means to reduce those risks.

This led to a Government initiative to increase flood protection measures for the City of Winnipeg and communities in rural Manitoba. An independent engineering group was commissioned to research and identify the best options for flood protection. In a document titled the *'KGS Report'*, the consultants recommended two main structural projects that would increase considerably the level of flood protection for Winnipeg. One option was to build a complex of dams and channels just south of Ste. Agathe, and the other option was to increase the capacity of the existing Floodway structure (Kontzamamiz-Graumann-Smith-Macmillan Incorporated [KGS], 2000). Further investigation determined the Floodway Expansion Project to be the best option. This triggered a joint Federal/Provincial environmental assessment for the proposed project.

The Red River Floodway is one of three flood protection measures constructed in the basin during the late 1960s. The Floodway is a large excavated channel, designed to divert water around Winnipeg. Following the major flood event in 1997, the Manitoba Government decided to expand the Floodway. In March, 2004, the Province introduced legislation, creating an agency (The Manitoba Floodway Authority [MFA]) to oversee the expansion of the Floodway. Complying with provincial and federal legislation, the MFA conducted an environmental assessment in which opportunities were provided for public consultation. The proposal to expand the Floodway involved widening the Floodway

channel, modifying and replacing bridges and utilities, and making improvements to the inlet and outlet control structures (Clean Environment Commission [CEC], 2005).

1.4 Thesis Organization

The thesis is organized into six chapters. The first chapter introduces the research and provides a rationale for linking social learning to the Floodway expansion EA. The second chapter reviews the relevant literature on natural resource management, social learning, and public involvement in EA. Emphasis is placed on describing social learning and linking concepts to practice. The third chapter outlines the research methods, including a rationale for group selection and background on the two groups chosen for the study. The fourth chapter provides a description of the Floodway expansion EA, and identifies what individuals have learned as a result of their involvement. The fifth chapter investigates the linkages between individual learning and social learning. A description of organizational memory and social learning is also provided. The sixth chapter explores ways that social learning can contribute to resource management and provides recommendations and conclusions.

Chapter 2

Review of Relevant Literature

2.1 Introduction

This chapter presents a review of several relevant bodies of literature. The chapter provided the basis for my research proposal, but it expanded and evolved as fieldwork began and data were collected and analyzed. The first section explores areas of resource management that display a high degree of complexity, uncertainty and conflict. Next, an overview is provided of some of the social learning approaches that have contributed to addressing these issues in the search for sustainability. Furthermore, social learning, as it applies to my research, is defined and the linkages between individual and social learning are investigated. Finally, public involvement in EA and the associated opportunities for social learning are then explored.

2.2 Complexity, Uncertainty And Conflict

Locally, and all over the world, natural resource managers and decision makers are facing problems characterized by a high degree of complexity, uncertainty and conflict (Cardinall and Day, 1998; Blatner et al., 2001; Mitchell, 2002; Diduck, 2004). Conventional resource management approaches tend to focus on expert-driven solutions and typically have limited opportunities for public access to the decision-making process. However, scientists and managers must be prepared to recognize their limitations and acknowledge the role that values play in their recommendations (Ludwig, 2001). The