

**WATER WELL TOLD:
STORYTELLING IN SOURCE WATER PROTECTION**

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By

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ABSTRACT

Stories are part of our every day, but do we understand what storytelling does? In Canada, source water protection (SWP) is a planning process that is predominantly applied to improve rural and Indigenous drinking water sources. During SWP locals will often contribute their expertise by reflecting upon and sharing stories with qualified professionals. To shed some light on the social interactions behind water solutions this thesis examines the functions that storytelling can have in SWP. Interviewing 16 individuals affiliated with SWP, I asked them to share with me their perceptions and recollections of storytelling in the SWP context. To interpret their insights, I developed an integrative framework for storytelling function called the Three Faucet Framework. My framework draws upon the foundational concepts of planning, water management, Indigenous water research, and medical decision-making to analyse storytelling using three layers: themes, recollections, and value. The first Faucet revealed that storytelling can perform many different functions in SWP, all of which connect people to others, people to water, or both. The second Faucet methodically coded recollections of stories and found that informal settings are important for storytelling, and the most popular function of storytelling was to *share place-based knowledge*. The second Faucet provided good discussion topics, but the third Faucet assigned value to storytelling. To determine value I applied cultural theory's idea of clumsy solutions to recollections of stories and observed several different ways of framing water problems; different rationalities. The SWP process relies on people from various government departments, expertise, and cultures, thus opposing ideas often collide. The best, 'clumsy' solutions emerge when every voice has a chance to be heard, and my findings confirm that when given the right space, storytelling encourages this process and likely enhances Indigenous involvement in water solutions.

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This study was conducted in the traditional lands of First Nations of Treaty 6 Territory, and in the homeland of the Métis. All who live and work here are the beneficiaries and keepers of Treaty peace and friendship.

Thank you to the 16 interviewees, for your time and honest input. You possess more knowledge than one hundred peer-reviewed articles. I have strived to interpret the truth of your words here, and I hope you feel justly represented. Water problems are about our humanity just as much as our technology. To protect water we need to connect, and I hope that this thesis brings us a little bit closer to that.

To my Supervisor, Dr. Graham Strickert the multi-method champion. You see the potential in every collaboration and know how to spark it. Thank you for your endless empathy, the writing advice, many hours of editing, tedious funding orchestration, and of course, your patience.

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DEDICATION

This thesis is dedicated to the champions of First Nations across Canada who are actively building relationships and community capacity, the ‘bridge’ builders. I have been privileged to work with, learn from, and befriend these champions in so many fields: academia, consulting, regulation, watershed groups, and local Indigenous government. You deserve immense recognition for acting seven generations ahead, and if you retired tomorrow you’d have done more for our future than most ever will - but I hope you keep at it. The projects you manage are innovative and understaffed, yet critical. You are helping First Nations communities regain their sovereignty and sense of place, giving substance to the idea of reconciliation, and it is spectacular work.

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LIST OF ABBREVIATIONS

ISC – Indigenous Services Canada (formerly Indigenous and Northern Affairs Canada)

SWP – Source Water Protection

NSRB – North Saskatchewan River Basin

WSA – Water Security Agency

LEK – Local Ecological Knowledge

TEK – Traditional Ecological Knowledge

QAS – Qualitative Analysis Software

TRC – Truth and Reconciliation Commission (of Canada)

PREFACE: A SOURCE WATER PROTECTION STORY

[Three people sit in a First Nation Land Management office: Darcy sits next to a desk writing in a binder, Dakota patiently examines a wall map, Leslie sips coffee in the corner.]

Darcy (sets down pen): “Hey everyone. Sorry, it’s been busy this week, but it’s the end of the fiscal year so, what’s new.”

Dakota: “No worries. Leslie, how’re you this morning?”

Leslie: “Yep. Busy getting ready to seed those sections. So, you called me in what’s up?”

Darcy: “Well good news. We’ve got some funding to assess the Reserve and protect the drinking water. Remember the flooding last year? In that emergency meeting with the Band Council, the watershed group and renters? We agreed to make sure the water treatment plant doesn’t have any more surprises like that. Facilities just couldn’t keep up. They had to pour a bucket a day of chlorine into the system and the whole Reserve smelled like a swimming pool.”

Dakota (leaning forward): “So we’d like as many voices as possible at the table. It’s an opportunity to reduce other risks too, like pesticides and burning that leaches into the groundwater.”

Leslie: “Sounds great but I’ll be busy until May. Where’s Blair?”

Darcy (shrugs): “I called and left a message, never got a reply.”

(Momentary pause)

Leslie: “I heard you have a new water treatment plant, figured your family knows the water distribution system, with your sister at the trade school and your brother in public works.”

Dakota: “Yeah my sister works with some contractors, but to make any new system last we still need to be prepared. This source water protection plan would decrease damages and costs for us all, you know? You might even get some culverts from the province to keep your land dry.”

Leslie (raises an empty coffee mug): “Got anymore coffee?”

[The three stand and move to the coffee room where they continue chatting.]

Darcy: “Okay, so part of this would be about controlling the flow of water. That will make sure Chris’ land doesn’t flood again, the way those lease ponds overflowed because the creek couldn’t handle the spring melt. Remember?”

Leslie (staring intently at Darcy): “Of course I remember that. But what was I supposed to do, all that water would have spoiled the grain. That’d be 45 grand out of my pocket.”

Dakota: “Yeah, it was a garbage situation. Did you know, Chris’ driveway got washed out too.”

Leslie: “Shoot, I didn’t know that.”

(Momentary pause)

Dakota: “Did you hear, Blair never did get around to fixing that fence between them and the creek? Yeah last summer four horses walked right into Chris’ yard and by the time Chris noticed they had already trampled the garden and eaten the lawn.”

(The others chuckle)

Dakota continues: “I had to help Blair start that old four-wheeler. Chased them all the way to the office, do you remember that Darcy?”

(Darcy nods, grinning)

Leslie: “Yeah, I wouldn’t expect Blair to get involved in this. But what can I say? Actually, last time I drove by I saw railway ties stacked on his neighbor’s quarter. You might want to go check that out. The water running off can’t be good for the creek.”

Dakota: “Yeah! That’s exactly the kind of thing we’d be talking about.”

(Phone beeps and a new voice is heard)

Blair: “-ties won’t move anytime soon. I’m here, I’m on the phone. Should I just hang up?”

Leslie: “Oh hey, is that you Blair? Yep we can hear you.”

Darcy: “Glad you joined us. So Leslie, if we hold a few consultations over the summer and bring in someone to test the water, would that work for you?”

(Leslie nods)

Blair: “Why bother testing it? You know it’ll be high in nitrogen.”

Darcy (continues): “And if we get any claims for land you’re leasing, would you be willing to discuss the way you farm it?”

Leslie (nods again): “I’d be open to discussing it if I could keep leasing it. Did I ever tell you about that time I almost lost the cultivator in that north pond?”

[Blair hangs up the phone. The dialogue continues as Darcy, Leslie, and Dakota exit the office.]

The story above prefaces the main body of my Master’s thesis and is intended to accomplish several things. I, the researcher and student, composed the story’s dialogue to illustrate the subject matter of my research, prepare the reader for an unconventional topic, reflect my findings, and maybe even spark interest. Beginning a Master’s thesis with a fictional story may appear cavalier, but the next four Chapters will demonstrate how storytelling, in all its informality, offers very real value to drinking water solutions.

CHAPTER ONE: INTRODUCTION AND LITERATURE REVIEW

Drinking water is no laughing matter. When drinking water is threatened, a community may call upon a qualified professional, or expert, to fix the problem. This thesis argues however, that more than one expert is needed to find lasting solutions for water. Until recently, engineering traditions have overshadowed social factors of water management such as collective behavior and differences in culture (Pahl-Wostl et al., 2007; Silbernagel et al., 2015). That overshadowing is problematic, as human behavior has a very real impact on water quality (Bradford et al. 2019). To better account for social factors, Beck et al. (2018, p. 260) argue that resolving water problems should combine the “quick engineering fix” with “the local, socially sensitive, integrationist approach.”

I have provided insight on the ‘integrationist approach’ to water solutions by exploring the role of in-person storytelling during source water protection (SWP). In Canada, SWP is a planning process that is predominantly applied to improve rural and Indigenous drinking water sources. Furthermore, to determine if storytelling indeed adds value to drinking water solutions, I applied principles of cultural theory.

<i>Source Water Protection</i>
The first step in a multi-barrier approach to protect drinking water that targets pollution in the landscape around rural communities (Ivey et al., 2006).

This thesis qualitatively examined storytelling in SWP planning to understand what storytelling does for SWP and if it helps people solve drinking water problems. To address the question “what is the function of storytelling in SWP?” I interviewed actors involved in rural and Indigenous SWP and built a framework to analyse their input. The research objectives were to:

1. conduct individual interviews with SWP committee members and key referrals;
2. develop a qualitative framework that integrates insights from contextually appropriate literature to: extract possible functions of storytelling from qualitative interviews,

- identify recollections of storytelling from the same interviews, and determine what value storytelling adds to SWP; then
3. summarize common characteristics of storytelling in SWP, primarily what function(s) and value emerge based on the results of objective two.

Beginning with a narrative inquiry approach, I interviewed individuals with SWP experience and key referrals about their experiences solving drinking water problems. I then derived an analytical framework to achieve objectives two and three in a three-part content analysis of the interview transcripts. My analytical framework, termed the Three Faucet Framework, uses insights from context-appropriate literature to identify key themes, recollections, and value of storytelling in a SWP context.

The storytelling I covered is second-hand and what I assessed are impressions of storytelling through the words of participants. By exploring the recollections of those who remember storytelling in SWP (often through listening to stories and sometimes through telling them), I immediately omitted the storytelling encounters that were not memorable. The results are based on storytelling that made enough of an impression on participants to be remembered in detail.

This first chapter presents the study approach, describes the context, and provides a contextually appropriate literature review. The section on context may appear broad in scope, but, as the researcher, it is my responsibility to explain the circumstances of SWP if participant input is to be accurately interpreted. The literature review is presented in two parts: the storytelling literature, and determining value.

The chapters cover methodology and the analytical framework I developed, research findings, and key discussion points. This thesis is capped with a conclusion. No interview transcripts were included because the study participants are known to one another so including their transcripts would compromise their confidentiality.

1.1 Study Approach

During SWP planning, people with knowledge of life in the region gather to assess the risks involved with drinking their water and to propose mitigation strategies (Patrick et al., 2019). Since the success of SWP decisions depends on intimate knowledge of local behavior, Patrick et al. (2019) emphasize the importance of an open and effective exchange of local perspectives. One

undervalued way to share local perspectives on water is through storytelling, especially from people who interact directly with water resources (Gearey et al., 2016; Finn & Jackson, 2011; Silbernagel et al., 2015). Storytelling and SWP pair well because storytelling is a central part of Indigenous epistemologies (Hunt, 2014; Iseke, 2013; Kovach, 2010) and because there is a need to decolonize water decision-making procedures in Canada (Arsenault et al., 2018; Bajius & Patrick, 2019). Storytelling in this context referred to stories that emerge in person during natural conversation.

Because of a story’s ability to convey both information and value, researchers have already begun to explore how storytelling plays a role in planning processes (Sandercock, 2003; van Hulst, 2012). Links between storytelling and water have been made in many directions of research, but my searches on SWP revealed no analytical explanation for the role of storytelling in the pursuit of drinking water solutions. With no previous examples to build upon, I integrated the insights from certain foundational concepts on storytelling (Figure 1.1), using the context of SWP in the North Saskatchewan River Basin (NSRB) as a selection guide.



Figure 1.1 *Conceptual display of this study’s theoretical framework.*

To design a suitable theoretical and analytical basis to examine stories in SWP, I relied on the following disciplines, conceptual and theoretical frameworks, and communities of practice to develop my methodology and interpret results: planning, Indigenous water research, medical

decision-making, water management, sustainable development, and cultural theory. Insights from the above are synthesized in the literature review section later in this chapter.

My research focused on how people tell their stories rather than the content they share, making it a form of narrative research, resembling, but distinct from, biographical research. In an introduction to biographical research, Roberts (2002) describes narrative research as an investigation into the daily life of individuals, which can include oral histories, autobiographies, and ethnographies. The difference between works of narrative research and this one is that my research question asked about the function of storytelling (what stories do) and the use of narrative content rather than the value of the content itself.

According to their Meriam-Webster (2020) dictionary definitions, a narrative and a story can be the same thing: “a way of presenting or understanding a situation or series of events that reflects and promotes a particular point of view or set of values.” However, storytelling is the act of conveying a story, referring not only to the story but also to the manner, setting, and people through which the story/narrative is shared. Storytelling has been defined in the planning literature as being “built from events involving actors who are placed in a temporal and spatial setting. Telling stories is not just listing events. Through the specific way in which stories represent that which has happened, they emplot the past. That is, they connect story elements in such a way that they form a coherent whole.” (van Hulst, 2012, p. 300). van Hulst’s definition of storytelling was used in this thesis and its analytical framework.

In this research, I focused on recollections of storytelling, specifically participant references to stories that included people, places, and a timeframe, with both storyteller and listener present. A typical interview would open with casual conversation about SWP, and then I would listen as the participant recalled a story or several that someone had told them. The context and purpose of each story was regarded to be just as important as the content of the story itself since any variation in either could give the story an entirely different meaning. I also examined the rationality behind the storytelling. ‘Rationality’ can be loosely translated as the way someone perceives a piece of information and forms knowledge from it (Thompson, 2003; Schwarz & Thompson, 1990).

1.1.1 Context

A qualitative study attempts to interpret participant input with as little bias as possible (Rossman & Rallis, 2016). Without some background on water regulations and demand in the

NSRB, I might have had only superficially understood the data, and my analysis might have therefore been inappropriate. The context described here precedes my literature review because it was used as a point of inception for the theoretical and analytical framework. It describes the study site's geography, participants, water regulation, and jurisdiction, and articulates the source water challenges faced by Indigenous Peoples in (but not limited to) the study site.

The Canadian Province of Saskatchewan has completed large-scale SWP plans, with the aid of stakeholders and community members, combining the efforts of the Saskatchewan Water Security Agency (WSA) and watershed groups (Wang & Patrick, 2014). My interest centered on the SWP planning done locally in the NSRB, which occurs mostly in Indigenous communities. Planners, health officials, regulators, Indigenous and municipal governments, watershed groups, and others involved in water decision-making (here referred to as actors) all play a role in planning and implementing SWP plans.

This region was chosen because more Indigenous SWP plans have been conducted here than in any other watershed in Saskatchewan. Below is a map of the NSRB, which is approximately 41,000 km², and its position within the larger Saskatchewan River Basin (SRB), approximately 400,000 km² of prairie landscape that crosses two provincial and one international boundary (ECCC, 2011; USASK, 2011).

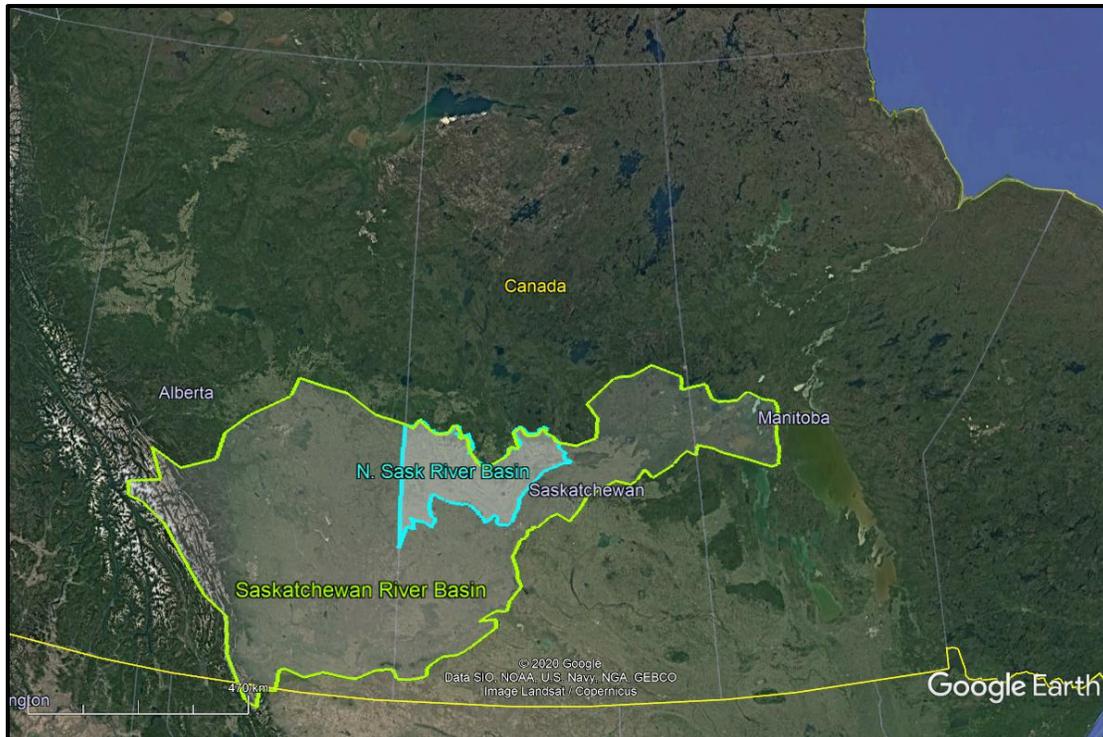


Figure 1.2 Study site, the Sask. portion of the North Saskatchewan River Basin, Treaty 6 Territory, within the larger Saskatchewan River Basin.

Through the combined efforts of basin residents, non-governmental organizations (NGOs), and government representatives, communities, and engagement by the North Saskatchewan River Basin Council have resulted in SWP plans for nine Indigenous communities and one RM, giving the NSRB more Indigenous SWP plans than any other watershed in the province (NSRB, 2019). My first objective was to contact and interview those responsible for developing these SWP plans.

1.1.2 Participants

Participants were identified in two waves. The first wave of participants had served on previous SWP committees in the NSRB. I had to broaden the scope of participants because only seven individuals from SWP committees were available for an interview, not many for such a large watershed. Nomination by other participants, or ‘snowballing’ (Rossman & Rallis, 2016), was deemed an appropriate strategy for recruitment because committees do not develop SWP plans alone. In addition to their professional training, SWP committees draw support from a largely informal network of water champions built through friendships, previous work, shared government funding, and/or shared waters. This network shares knowledge based on their own

experiences solving source water problems, such as well water contamination, flooding, pollution, water treatment, and jurisdictional disputes over surface water flow. Thus, the second wave of participants was identified because the individuals had contributed to SWP in an indirect but important way.

The resulting pool of participants consisted of previous SWP committee members and their referrals, members of a water network that includes Indigenous community members, First Nations (Indigenous) Band employees, Elders, WSA representatives, locally involved agricultural producers, and agricultural technicians. All participants have a history of solving source water problems in the NSRB.

1.1.3 Interpreting the Data: About the Researcher

There is some subjectivity involved in interpretive research, therefore I have included this small section to describe my background on the subject of SWP. I am a fourth-generation settler Canadian from a prairie farm approximately 550 kilometers from the study site. I possess a Bachelor of Science degree in Freshwater Science from the University of British Columbia and have spent the past five years consulting in Western Canada on various oil and gas, water and agriculture research, and Indigenous environmental planning projects. I have never been employed for the purposes of completing SWP plans but I have studied them and networked with many people who do. Although being an outsider to SWP and the study site limits my tacit knowledge of it, I believe that provides me with a reasonably objective view and removes the potential for favouritism or bias.

The training from my science degree pulled my focus toward engineering processes of water risks and solutions more than the social processes. Therefore, to complete this study to the best of my ability, I invested four years of strategic employment, coursework, and guided research to expand my expertise to include qualitative water research. As cultural theory promotes, understanding an issue from more than one angle should lead people to find better solutions, and that is what I have attempted to accomplish with this thesis.

1.2 Study Site

In the NSRB, surface water sustains three cities, 51 rural municipalities (RMs), 100 towns and villages, and 29 First Nations on 17 First Nations Reserves (NSRBC, 2017). In 2001, the Saskatchewan Watershed Authority (SWA) reported that approximately 116,500 people live in

the NSRB, with 48% in cities, 27% in rural areas, 17% in small communities, and, roughly, 7% on First Nations Reserves (SWA, 2007). The NSRB is situated within Treaty Six Territory, homeland of the Métis Peoples, and lies within the traditional territories of the Assiniboine and Cree peoples (Finn, 2017).

After European settlement, water regulations in what is now Saskatchewan were put in place to control the shipping of goods, later evolving to address the complexities of ecosystem demands and climate change (Saskatchewan Environment, 2018). Several water-related acts were drawn up to facilitate agricultural cultivation. Some of these acts were intended to regulate rivers, such as the Natural Resource Transfer Act of 1930 (Baijius & Patrick, 2019), to address drought crises (1935), to clarify responsibilities for waters across jurisdictional boundaries (1997), and to account for emerging data on groundwater (1959). Prior to 2013, the WSA was known as the Saskatchewan Watershed Authority (SWA). The WSA is the provincial authority responsible for protecting the health, economic potential, and flow of water and watersheds in Saskatchewan (Government of Saskatchewan, 2013). After the cryptosporidium contamination of North Battleford's water supply in 2003, the WSA initiated SWP planning through the Safe Drinking Water Strategy (SWA, 2003). Since then watershed groups have expanded their scope to deal with flooding, drainage, and watershed planning (WSA, 2012).

The resettlement of the Canadian Prairies after 1867 by European immigrants created a landscape of water regulation where Indigenous Reserves, rural communities, developing industry, and urban centres continue to vie for water access (Armitage et al., 2015; Bakker., 2011; Bakker et al., 2012; Strickert et al., 2016). The rivers provide much of the surface water supply, so upstream withdrawals, nutrient pollution, and wetland drainage have lasting impacts on the drinking water of those downstream (Wheater & Gober, 2015).

1.2.1 Shared Waters - Actors and Governance

In Saskatchewan, many different departments are called upon during SWP planning. With the establishment of the Safe Drinking Water Strategy in 2003, the WSA agreed to provide technical and educational assistance to the watershed groups who would oversee a SWP plan for their designated region of surface water drainage (SWA, 2003). Since the primary source of water pollution in Saskatchewan is nutrient loading from agriculture (Kulshretha et al., 2012), representatives of the Ministry of Agriculture's Agri Environmental Technical Services have provided technical knowledge to SWP planning (NSRBC, 2012). Indigenous communities also

receive targeted support for SWP in Saskatchewan. To try to reduce chronic drinking water advisories on reserves, Indigenous Services Canada (ISC) offers educational and financial resources to Indigenous communities for SWP (AANDC, 2014).

The Canadian federal water authority covers Indigenous lands, fisheries, navigable waters, and interprovincial or international waters, all within provinces, yet provinces are responsible for all other water policy and enforcement (Gober & Wheeler, 2014). The Prairie Provinces of Alberta, Saskatchewan, and Manitoba share surface water according to the terms of a Master Agreement on Water Apportionment, established in 1969 and revised twice since (PPWB, 2016). Gupta et al. (2013) argue that challenges vary with geographic scale throughout their overview of water governance approaches and that this is a challenge in itself: “There is consensus on the need to manage water as a multi-level resource because of the teleconnections between different scales, levels, and sectors that deal with water” (p. 577). Without coordination between departments the provinces, cities, reserves, and other stakeholders of the Prairies have to defend their own interests, sometimes with varying degrees of legal or public support.

In Saskatchewan, although SWP planning began as an initiative of the provincial government, its planning and implementation is the responsibility of water stewardship groups (Wang & Patrick, 2014), which struggle to enact lasting change because they hold no legal authority. Saskatchewan water stewardship groups, therefore, rely on government channels to provide funding and technical support for SWP from the WSA, the Ministry of Environment, and the Ministry of Agriculture (Wang & Patrick, 2014). When planning capacity is provided by different government agencies and organizations depending on jurisdiction or geography communities can find the process of seeking help bureaucratic and confusing.

Amid the various water actors and jurisdictions on the prairies, Indigenous Peoples have little say in water decisions (Bradford et al., 2016; Morgan et al., 2014). As with most jurisdictional boundaries in Canada, First Nations reserve borders (Indigenous lands) were drawn up with no regard for hydrologic flow and are a legacy of colonial European settlement. Federal responsibilities for Indigenous water become unclear when the source water is connected to that of the surrounding RMs, towns, and/or cities that are provincially regulated (Marshall et al., 2018).

1.2.2 Indigenous Peoples and Water

Colonial boundaries become increasingly problematic as Indigenous communities seek aid for SWP. Water governance studies (e.g., Moore et al., 2017; Nowlan & Bakker, 2010) frequently discuss the chronic drinking water advisories on Indigenous reserves in Canada. The lack of Indigenous control over industrial and recreational activities surrounding their reserves has had serious health implications for Indigenous communities (Patrick, 2011). The problem is paraphrased well by Baijius and Patrick (2019):

Decisions related to land and water management on reserved lands are typically evaluated strictly against administrative criteria... [which] change over time, according to the whims of program managers. Local knowledge holders, as well as Indigenous perspectives on appropriate relations with the land, have long been ignored.

Health solutions are the primary benefit of SWP, and these plans also offer a way for Indigenous groups to reconnect with their sense of place, a condition many of them experience in the wake of dispossession caused by settler colonialism. Even with SWP, negative health impacts of poor drinking water in Indigenous communities persist, and a need has been identified for more research on drinking water and health outcomes for Indigenous Peoples in Canada (Bradford et al., 2016). Increasingly recognized as unique for Indigenous Peoples through rights and culture, water relationships reveal that colonial regulation is ill-suited for dealing with drinking water contamination or shortages in Indigenous communities (Simms et al., 2016; Supreme Court of Canada, 2014). This gap between Canada's colonial legacy and Indigenous engagement is sometimes bridged by local efforts to connect Indigenous communities with their neighboring communities.

Watershed groups in southern Saskatchewan have extended invitations to Indigenous communities to provide input on watershed SWP plans. However, the invites are often professionally structured such as to boardroom meetings in the province's capital city of Regina and though official, these settings are inherently colonial, non-neutral ground, and often far from Indigenous lands. It is understandable that First Nations striving for sovereignty would be skeptical of these invitations, especially when stewardship groups still possess no legal authority. Specifically, effort needs to be put toward incorporating Indigenous methodologies into planning (Baijius & Patrick, 2019). Storytelling is a method of Indigenous research (Kovach, 2010),

though not exclusively an Indigenous methodology. By selecting storytelling as a topic I hoped to provide insight into qualitative research that can coincide with Indigenous methodologies.

The remainder of this chapter consists of a literature review. Chapters Two through Four explain the methodology, findings, and discussion points with conclusion.

1.3 Literature Review

The first section of this literature review provides a summary of relevant storytelling literature. Topics include storytelling in planning, storytelling and sharing water, and storytelling with Indigenous Peoples. The second section introduces cultural theory and its usefulness as a theoretical lens in a setting that features multiple voices such as SWP. The strategy for examining the data through the lens of cultural theory is unpacked in Chapter Two, Methodology.

1.3.1 Storytelling Literature

When making environmental decisions it is important to present the evidence but this may not always be easy. In their exploration of stories in climate change communication, Moezzi et al. (2017) state that storytelling can “reframe evidence in ways that more science-ordered formats miss” (p. 1), arguing that our idea of truth is based on available facts that filter through belief and emotion. In other words, the stories we hear can provide a unique perspective on evidence, often bringing emotion to bear on facts and statistics and making them memorable. Other authors point out that story sharing is remarkable in its ability to build trust and understanding among those present (Gearey, 2016; Kim & Ball-Rokeach, 2006; Lejano et al. 2013; Little & Froggett, 2009; Liu et al., 2018; van Hulst, 2012).

Understanding the world through shared stories has been explored as a concept by environmental historians through a co-adaptation between humans and natural environments they shape. In his paper on the narratives/stories depicting the agricultural belt of the United States, Cronon (1992) argues that narratives about a landscape can manifest and modify it. Narratives change our environments when they frame humans, animals, and the natural world as characters based on a set of values, ultimately convincing people how they should behave, including how they plant, irrigate, or cultivate. These examples touch on some very real aspects of SWP, such as sharing environmental evidence, helping people work together, and communicating values about the environment with the future in mind. These features provide a foundation for approaching storytelling in a SWP context without the need to dissect the stories themselves.

Although a cross-disciplinary set of standards for evaluating stories has yet to be identified (Moezzi et al., 2017), various disciplines have analyzed the role and function of storytelling. I explored findings from several disciplines and other communities of practice to form an integrative theoretical basis for this thesis. The storytelling literature most relevant for my topic and question is summarized in Table 1.1 below. Literature searches that included storytelling were based on the context described earlier in this chapter: SWP, planning, Indigenous water research, environmental sciences, environmental history, water decisions (water management, water quality, and watershed governance). The need to develop the analytical framework prompted me to widen my search to include storytelling and healthcare decision-making; storytelling and sustainable development; and psychology and social learning.

Table 1.1 Possible purposes of storytelling from literature searches of storytelling in these areas: planning, Indigenous water research, water management, sustainable development, and environmental science.

Possible Purposes of Storytelling	Foundational Concept	Journal(s) / other	Sources
Inform, share values, predict	Environmental History	<i>Journal of American History</i>	Cronon, 1992
Build trust, Integrate	Water Governance	<i>Water</i>	Arsenault et al., 2018; Ruiu et al., 2017
Inform (Educate), Empower, Gather Perspectives	Environmental Sciences; Environmental Evidence	<i>Energy Research and Social Science; Conservation Letters; Ecology and Society; Environmental Science and Policy; Sustainable Development; Local Environment</i>	Brown, 2017; Carragher et al., 2018; Fernández-Llamazares & Cabeza, 2016; Gearey 2016; Herman-Mercer, 2016; Lejano et al., 2013; Moezzi et al., 2017; Sundin et al., 2018
Inform, Inquire, Integrate	Water Research with Indigenous Peoples	<i>Ecosystems; Ecology and Society</i>	Finn & Jackson, 2011; Jackson et al., 2014
Bridge Perspectives, Instill Belonging	Communication Theory	<i>Proceedings of the National Academy of Sciences; Communication Theory; Community and Development Journal; Journal of International and Intercultural Communication</i>	Dahlstrom, 2014; Kim & Ball-Rokeach, 2006; Little & Froggett, 2009; Liu et al., 2018
Collaborate, Empower, Understand, Build Trust, Entertain, Instill Morality, Instill Belonging	Indigenous Rights and Ethnography	(Ethnographic) Book; <i>Cultural Geographies</i>	Bird, 2005; Hunt, 2014

Reconcile, Empower, Build Trust, Integrate, Regulate	Indigenous Law and /or Reconciliation	<i>English Studies in Canada; (Online publication) Indigenous Law Research Unit</i>	Corntassel et al., 2009; Groft & Johnson, 2014
Inform, Persuade, Collaborate, Resolve Conflict, Understand	Planning Theory	<i>Planning Theory</i>	van Hulst, 2012
Inform, Empower, Heal, Inspire	Human Rights Education	<i>Race/Ethnicity: Multidisciplinary Global Contexts</i>	Chin & Rudelius-Palmer, 2010
Persuade, Manipulate	Business	<i>Science and Business Media</i>	Auvinen et al., 2012
Build Trust, Collaborate, Inspire	Leadership and Management	<i>Management Decision</i>	Grisham, 2006

As shown by the array of approaches described in Table 1.1, storytelling has been recognized to serve a multitude of purposes in different study contexts. This table serves as a foundation for the way storytelling is approached and analyzed in this thesis. It demonstrates the scope of storytelling best suited to the context of SWP, as well as a portion of this project's analytical framework.

The rest of this subsection summarizes the key insights found in the sources listed in Table 1.1, showing how they applied to this study's context: responding to the NSRB's jurisdictional complexity, (SWP) planning processes, and Indigenous water problems. These insights are building a sense of shared water; assisting in management and community planning; and communicating with Indigenous Peoples on the topics of water and the environment.

Shared Waters: Sharing a local geography can offer opportunities for encounters and conversation. In Communication Infrastructure Theory (CIT), shared places as physical settings for communication can serve as bridging mechanisms among ethnic groups, framing everyone as neighbors (Ball-Rokeach et al., 2001; Liu et al., 2018). Community can refer to multiple populations who share a way of life or can be restricted to jurisdictional boundaries (Wittrock et al., 2011). This thesis uses the term 'community' as it pertains to a politically bound entity, but definitions of community can be flexible when water is concerned. Throughout a watershed, local stakeholders can collect and map community narratives about water. These narratives can provide valuable information for those making decisions about watershed planning (Johannes et al., 2002). According to work done by Gearey (2009) on how community water stories frame water resources management, storytelling has the potential to communicate big pictures at a local scale, helping watershed groups and government share sustainability discourse with the public. Storytelling has even been shown by Sundin et al. (2018) to enhance the processing of evidence and enable evidence-based decisions to be made that benefit the environment.

Community members play a role in SWP by contributing their knowledge of human activity in their area. SWP reports feature stories in the form of historical sections that provide geographical, cultural, and economic context. This is valuable information, but it is not clear how any of the written text came from in-person dialogue. More literature was needed to shed light on the social processes that occur during community planning and the role storytelling might play.

My literature searches into planning settings revealed that aside from the discipline of planning itself, useful insights are offered by other fields of practice such as leadership and management (Grisham, 2006), and cultural theory (Thompson, 2011).

Management literature offers insights on storytelling as an internal tool for management. Face-to-face storytelling can assist leaders by instilling the inspiration, empathy, and trust needed to achieve common goals (Grisham, 2006). Planning theorist van Hulst (2012) supports the use of storytelling in and for planning. However, he points out that it does not necessarily lead to “an inclusive, community-focused planning practice,” adding that storytelling in planning is ubiquitous, occurring for example “in boardrooms, in meetings of civil servants,” and “in meetings of citizens” (p. 305). He emphasizes that community focus and inclusivity only occur with “a particular kind of storytelling... in which many actors with different backgrounds, perspectives, values and interests come together and respectfully engage one another” (p. 305). This convergence of actors with different perspectives is similar to the process that cultural theorists describe as the best way to find solutions to convoluted problems, where incompatible ways of looking at the world are bounced back and forth until the merit of each is recognized and a complete picture emerges. This social process results in what has been called ‘clumsy solutions’ (Verweij et al., 2006; Verweij & Thompson, 2006) which I explore further in the Determining Value section below.

Indigenous Peoples and Water: One part of Canada’s water story is the chronic nature of drinking water advisories on Indigenous reserves in Canada, a problematic legacy of colonial regulation and systematic exclusion (Baijius & Patrick, 2019). Improving Indigenous involvement in water decisions requires that the value of their traditional knowledge be recognized in processes of water management, particularly by inviting Elders to meetings (Borrows, 1997; Simms, 2014). Storytelling holds great potential as an Indigenous method for describing human impacts on aquatic environments and incorporating Indigenous values into water management (Arsenault et al., 2018; Finn & Jackson, 2011; Jackson et al., 2014;). However, qualitative researchers caution the scientific community, maintaining that Indigenous cultural stories must be interpreted carefully and not taken out of context (Iseke, 2018; Herman-Mercer et al., 2016). When research is conducted with respect using iterative consultation, there is great value in exploring Indigenous voices on water (Matsui et al., 2016), which can be seen in

the Decolonizing Water project (2017) and the work on Inuit Law by the Indigenous Law Research Unit (2014). I believe that SWP planning completed with Indigenous communities in Saskatchewan serves as an important platform for Indigenous voice in water decisions.

From governmental departments to watershed groups and Indigenous experience, stories in a SWP context could involve a variety of voices. In the next section I present two approaches that have been used to incorporate social input and interaction into studies on water decisions, concluding the literature review with an overview of a third, cultural theory, as the most appropriate for my research.

1.3.2 Determining Value

To understand the function of storytelling in SWP I had to consider why it might occur in the first place. How might storytelling be valuable to SWP? During planning processes (such as SWP), decisions depend on a shared understanding that occurs when people feel their lived experiences are recognized, a process that is facilitated by storytelling (van Hulst, 2012). Since SWP is a combined effort, and storytelling involves more than one person, I estimated that the answer lies in the interactions that lead to water decisions.

I reviewed a range of studies to understand how people interact to make decisions about water. In a recent SWP article by Baijius & Patrick (2019), political ecology was used to determine people's views on water. Political ecology explores the discourse around anthropogenic development and the environment, focusing on power relations between different actors (Baijius & Patrick, 2019). However intriguing, in this study the participants were mostly acquainted with one another, so to keep their input confidential I was unable to illustrate the power dynamics necessary for political ecology theory. Transferability of methods is another challenge that arose from the unique nature of this setting and the small network of participants.

Resilience theory has been used by Tang, et al. (2013) who proposed resilience-based mechanisms to reduce negative drinking water incidents. Also relevant to SWP, Goldstein et al. (2015) found that resilience thinking allows planners to consider multiple voices, embrace uncertainty, and avoid the pitfalls of over-simplified models. Resilience theory focuses on a longer process of psychological and social development (Henry & Ramirez-Marques, 2012) than SWP covers. If this study was to retain some measure of transferability, then I needed a different

approach. After reviewing the literature up to this point I had learned that diverse perspectives can improve water decisions, so I focused on that.

Cultural Theory: Cultural theory is one approach used by Pahl-Wostl et al. (2007) to account for varied perspectives in water management. Cultural theory has also been used by Beck et al. (2018) to propose water waste solutions, using plural streams of thought to reframe waste as a resource instead of a nuisance. Also referred to as socio-cultural viability, grid-group theory, or the theory of plural rationality, cultural theory was pioneered in the 1970s and 1980s by anthropologist Mary Douglas to explain different forms of social organization (Schwarz & Thompson, 1990). Since then, cultural theorists have developed various frameworks around four types of rationalities, ways of perceiving information and forming knowledge from it: hierarchy, individualism, egalitarianism, and fatalism (Thompson, 2003; Schwarz & Thompson, 1990; Verweij et al., 2006).

In this thesis, the term rationality is used because storytelling is intertwined with how we make sense of the world (Gearey, 2018; van Hulst, 2012). Thompson (2018) argues that independent objectivity produces a fifth type: autonomy/the hermit. When originally developing Émile Durkheim's theory of social regulation and social integration, Mary Douglas arranged the original four rationalities along a two-axis spectrum to visualize the degree of regulation/grid and degree of social solidarity/group (Douglas, 1982). Autonomy cannot be arranged on these axes because it is independent of social solidarity and regulations. This illustration is often used to explain the rationalities and is why cultural theory is sometimes referred to as grid/group theory.

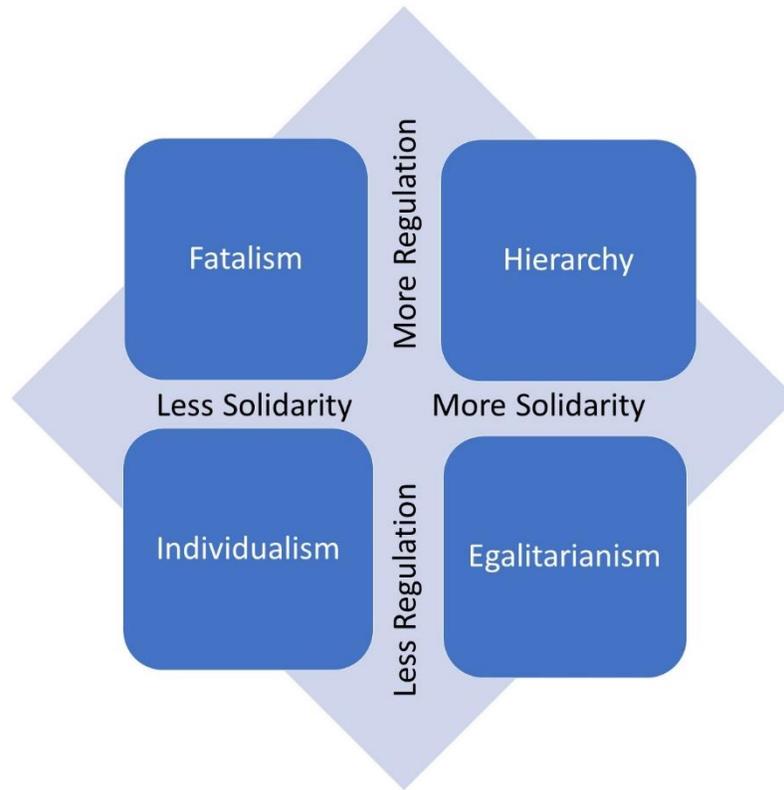


Figure 1.3 *Grid-group distribution of the four rationalities commonly found in cultural theory literature.*

This approach is suitable for my thesis topic because not only can it address different rationalities, but it can also offer some explanation for the collaboration that occurs during SWP planning. In cultural theory, the clumsy solution is a concept that encourages all collaborators to voice their opinion and consider alternative rationalities, while resisting the urge to settle for a more straightforward but often single-minded solution. For clumsy solutions, the mingling of different views and co-creation of options are encouraged to address social problems such as environmental policy (Douglas, 1968; Thompson, 2003), wicked problems (Thompson, 2011), climate change (Verweij et al., 2006; Verweij & Thompson, 2006), and water resource management (Beck et al., 2018; Pahl-Wostl et al., 2007).

The idea behind clumsy solutions is that when a problem is conceptualized and then discussed using all five rationalities, a solution emerges that incorporates insight from all angles, producing the best solution available. An alternative would be to rely on one or two rationalities to decide on a solution. These one or two rationalities may possess more influence or opportunity but are unable see the whole picture without someone to contradict them. Decisions made by

using only one pair of eyes may appear to remove any need for debate but can easily overlook pitfalls others would have foreseen, producing a solution that is less resilient and more likely doomed to fail. To rephrase, a solution made by only two rationalities is elegant but brittle (Ney & Verweij, 2015; Verweij et al., 2006; Thompson, 2013).

Given that storytelling facilitates the exchange of varied perspectives (Gearey, 2018; van Hulst, 2012) it seems reasonable to suggest that it may also encourage clumsy solutions. If this is the case, then it would confirm that storytelling occurs in SWP at least partly because it helps us find better solutions to drinking water problems. Cultural theory may appear at first to be an addition to my research question, but in fact it is integral. I used cultural theory to determine if storytelling has the potential to encourage clumsy solutions in SWP, determining the value of storytelling, and more thoroughly, its function.

Based on contextually-appropriate literature, I have established that storytelling has been used in contexts of shared waters, community planning, and Indigenous research methodologies, and that cultural theory can be used to determine a value of storytelling in SWP.

1.4 Chapter One Summary

This thesis used a derivation of narrative inquiry to interpret the experiences of participants using insights from the foundational concepts of planning, Indigenous water research, water management, and others. Learning from the NSRB, I refined my objectives: to ask what storytelling does in SWP (its function); to develop an analytical framework for storytelling to unpack the insights of participants, and to explore if storytelling has the potential to encourage clumsy solutions in SWP.

In the face of drinking water challenges on the Canadian Prairies and the exclusion of Indigenous Peoples from related discussions, water decision-making could stand to learn from SWP. Planners, health officials, regulators, Indigenous and municipal governments, and watershed groups could all benefit from using storytelling more strategically. The following chapters of this thesis describe the Methodology and the Three Faucet Framework (Chapter Two), Findings on Themes, Recollections, and Value (Chapter Three), and Discussion and Conclusion (Chapter Four)

CHAPTER TWO: METHODOLOGY AND THE THREE FAUCET FRAMEWORK

The methodological approach described in this chapter is derived from narrative inquiry. The discipline of narrative inquiry suited this study because it addresses non-neutral communication; meaning that participants are encouraged to actively convey meaning to the researcher (Bruner, 1990; Lafreniere et al., 2013). As well, this study follows an interpretivist paradigm because it assumes that reality is shaped by the way we experience the world. Under an interpretivist paradigm, a researcher attempts to understand subjective input of participants by examining social contexts through the participants' eyes (Scammell, 2010).

1.5 Methodological Approach

Here, narrative data were analyzed by constructing a framework from the combined insights of the storytelling literature outlined in Chapter One. The literature behind my approach was selected based on the SWP context of the study setting (see below). The water governance literature on the wider river basin also guided this approach to ensure some measure of relevancy to larger scale concerns about sharing water resources.

The aim of this work was to investigate the functions of storytelling as it occurs among actors in source water protection (SWP) by interviewing them about their experiences. To do so, I examined the perceptions and recollections of people who have worked in SWP and others who were recommended for their stewardship of water quality. In a small effort to mimic the conditions that facilitate natural storytelling, interviews were designed to be semi-structured and almost conversational. The interview questions covered the participants' personal involvement with SWP and local water, as well as their experiences using or hearing stories in that context. An array of storytelling functions, settings, and rationalities were observed during the interviews and expanded the scope of the analytical framework.

1.5.1 Study Site

The geographic scope of this research was a Saskatchewan watershed—the NSRB—but the input of participants sometimes reached beyond this region. The NSRB was chosen as the region of study because of its success in engaging nine Indigenous communities in SWP, more than any other watershed in Saskatchewan. The NSRB is within Treaty 6 Territory and the traditional territories of Assiniboine and Cree peoples (Historical Canada, 2018). Engagement of First Nations in Canada’s water decision-making has been limited in the past (Baijius & Patrick, 2019). The plans that have been co-developed with and by Indigenous communities are of special interest because they model a water network of actors who have worked together despite cultural barriers, diverse backgrounds and knowledge bases (Patrick et al., 2019).

1.6 Analytical Framework

The job of my analytical framework was to not only find out what storytelling can do in SWP but also to see what it has done. As Bazeley (2009) argues, qualitative researchers too often rely on the identification of themes to constitute the importance of their findings for their audience. Identifying themes is an important part of qualitative research but readers are only provided with a superficial overview of the data without a deeper dive into which themes or other study elements are important. To conceptualize the importance of this research for the reader, I followed Bazeley’s suggestion to include other layers to my framework and use visual representations that lead the reader beyond the ideas in the themes and toward meaning. So, my goal was to answer the research question in three layers that create what I have named the Three Faucet Framework (Figure 2.1). The first two parts were: (i) identifying themes of what stories do (storytelling function) from the perceptions shared by participants and, (ii) checking which of these themes were reflected most in the storytelling they could recall from memory. The third part of the Three Faucet Framework (iii) was used to determine the potential storytelling has to encourage clumsy solutions in SWP. The third part may appear tangential, but it provided a qualitative way to determine some value of storytelling. To provide an overview, through my analysis I sought to:

- i) perform thematic analysis to reveal what functions participants perceive storytelling to have (what stories do) in SWP in the form of themes,
- ii) determine how these functions are reflected in the specific storytelling events recalled, and which is/are most common.

iii) determine how which rationalities of cultural theory are embodied within the stories participants recalled.



Figure 2.1 *The conceptual structure of the Three Faucet Framework.*

Through content analysis, the Three Faucet Framework produced several function themes and a selection of recalled stories with corresponding qualities for each story (context, setting, purpose, function, and rationality). Each step in the analytical framework did one of two things, either sorting the stories to find those that most vividly stood out in participants' memories, or

assigning qualities to each story so that they could later be compared (coding or assigning themes). In a layered way, each step was informed by the last one, compounding until the stories were all examined to the same extent. The methodical nature of these steps allowed me to determine recurring (popular) storytelling functions, settings, and matched rationalities. The framework yielded substantial material on the different themes of storytelling function. Storytelling function themes are unpacked thoroughly in Chapter Three (Findings).

1.7 Data Collection and Analysis Overview

To make the research relevant and applicable in similar contexts where drinking water is of concern, the network of participants needed to represent several different stakeholder groups (Morgan et al., 2014). Participants were selected through purposeful sampling, and then snowball sampling. The first wave of recruitment involved contacting past SWP committee members listed under SWP plans in the NSRB, representatives of a First Nations Band Council, neighbouring RMs, and the local representatives of the provincial water regulator (WSA). The second wave of recruitment involved following up on recommendations of the initial participants. Recruitment and interviews continued until thematic saturation was reached in the first stages of analysis, resulting in 16 interviews ranging from 15 to 90 minutes. Thematic saturation is explained in Step 3, see Section 2.4.

To structure the interviews, I invited participants to discuss their experiences in SWP or similar water quality contexts they deemed important to share. The entirety of each interview influenced my interpretation of the participant's input, but special attention was paid to the storytelling participants could recall from SWP. The goal of examining these recalled stories was to see which of their ideas about storytelling were supported by their experiences. I audio recorded each interview and typed up the transcripts.

1.7.1 Transcripts and Coding Setup

After transcribing the audio recording of each interview manually, I analyzed the transcription using NVivo QAS, versions 11 and 12. The transcripts were labeled according to the order in which the interviews occurred. Portions of introductions, closing remarks, and brief unrelated tangents during the interviews were not transcribed. Each descriptive quote used from the interviews was edited to an intelligent verbatim transcription standard which allows the

transcriber to make small grammatical adjustments for easier reading (Salonga, 2017). Below, Table 2.1 provides a foundation for the terminology drawn from qualitative research for use here.

Table 2.1 *Terms from qualitative research that were used in this analysis. Derived from Rossman & Rallis (2016) and NVivo qualitative analysis software (QAS) 11.*

Term	Definition
Content Analysis	Determining meaning from qualitative data by examining the words participants say, rather than how they say them.
Theme	An idea or pattern of meaning that is repeatedly observed in the data.
Code	A word or short phrase that captures some attribute of the data. It is also a verb for highlighting and categorizing these phrases.
Quotation	A phrase selected from the data as evidence of a finding or argument.

First I analyzed the interviews thematically, as is the traditional approach in narrative research (Braun et al., 2006). For thematic analysis phrases with recurring ideas about storytelling function were identified individually and then aggregated to form categories. This process is explained in greater detail in the section on Themes. Once the function themes were identified, I selected participant recollections of storytelling from the transcripts, coded them to provide a methodical understanding of each, observed which of the function themes were most popular amongst the stories, and assessed how many different rationalities were supported by the stories. The terminology used in each step of the analysis can be found in Table 2.2.

Table 2.2 *Terminology used in this research as used by the analytical framework.*

Framework Terminology	Definition
Function	What a storytelling does; themes that were first identified in the transcripts (Faucet 1); later assigned to the stories based on all prior steps (Faucet 2).
Specific Storytelling Event	A story that a participant recalls hearing at a particular time and place, as opposed to a general type of story; a filter used to retain stories (Faucet 2).
Story	A short form for a specific storytelling event.

Sufficient Detail	Reference to time, place, and characters that provides the content of a story*; a filter used to sort stories (Faucet 2).
Content	The chosen words participants use to recall a story (Faucet 2).
Context	The circumstances that determine the content, setting, purpose, and functions of a storytelling event**; a type of code for the stories (Faucet 2).
Setting	The type of surroundings where storytelling occurred, either professional or informal; a filter used to sort the stories (Faucet 2).
Purpose	Why a story was shared; a type of code for the stories (Faucet 2).
Rationality	A way of perceiving information and forming knowledge from it ***; hierarchy, individualism, egalitarianism, fatalism, or autonomy; a quality matched to each story (Faucet 3).
Indicator	Three descriptive qualities selected**** to differentiate the five rationalities from one another: myth of nature, perception of time, and desired systems properties.

* Derived from van Hulst (2012)

** Derived from Pahl-Wostl et al. (2007)

*** Derived from Ellis & Wildavsky (1990); Schwarz & Thompson (1990); Thompson (2018).

**** Derived from Schwarz and Thompson (1990)

The data were revisited several times over the course of 11 months and the initial findings refined to ensure the final version was as robust and as replicable as possible. Since thematic analysis requires interpretation by the researcher, some subjectivity is inevitable (Rossman & Rallis, 2016), but after revisiting the data several times and refining the results of each step, I am confident in the final findings.

1.8 Themes

The first Faucet of the Three Faucet Framework was designed to identify participant perceptions of storytelling function. To be clear, themes of storytelling function (function themes) were not derived from the peer-reviewed literature. To ensure the study reflected participants' input and intent with clarity, function themes were derived from the transcripts. A thematic analytical process produced a list of storytelling function themes. Each of these themes are valuable on their own, but were also a necessary ingredient in Faucet 2 of the framework.

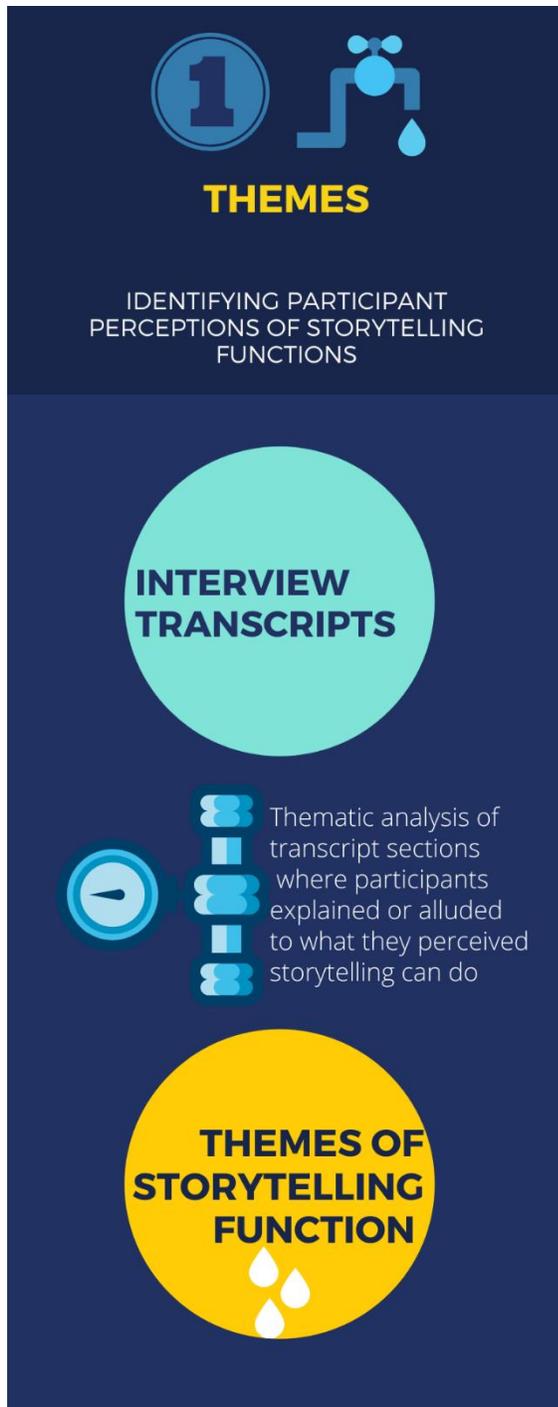


Figure 2.2 *The first part, or 'Faucet', of the Three Faucet Framework for storytelling function: Themes.*

The entire content of the 16 transcripts was examined for direct or indirect quotations on what storytelling can do. Next, these quotations were aggregated into different themes based on the ideas and topics they shared. The resulting 11 storytelling function themes were:

- ❖ Identify threats to water
- ❖ Share own experiences to benefit others
- ❖ Provide relatability
- ❖ Express personal voice
- ❖ Inspire sympathy
- ❖ Involve others
- ❖ Share place-based knowledge
- ❖ Co-construct a narrative
- ❖ Establish local water values and perspectives
- ❖ Build relationships
- ❖ Guide

As each new function theme emerged, the interview number was noted to see at what point in the interview process new themes ceased to appear, known as ‘thematic saturation.’ Thematic saturation is one way of indicating whether a sufficient number of interviews were conducted. This concept and each of the 11 storytelling function themes are explored at length in Section 3.1 in the Findings chapter of this thesis. Below is an example of one quotation that helped to form the function theme: *Establish local water values and perspectives*.

I remember hearing several times from several different community members across Saskatchewan that because of their concern with water contamination, it is affecting their traditional practices and utilization of the water sources within their communities. Not only just for physical health, but for cultural and spiritual ceremonies. (Interview 15)

The theme *Establish local water values and perspectives* is supported by this quote because of the way the participant frames water issues through the needs and perceptions of locals. Importantly, the word choice reveals that “their concern” is changing the ways they use water, suggesting that perspective is important. In the same breath, the participant mentions water has both cultural and physical value, specifically “within their communities,” a local scale.

1.9 Recollections

This second Faucet of the Three Faucet Framework was designed to examine storytelling functions using participants’ memories. This part of the framework and later interpretation of the stories was guided by a taxonomy for narratives developed for medical decision-making by

Shaffer and Zikmund-Fisher (2013). To provide a systematic evaluation of narratives as decision aids, their taxonomy framed narratives by content, overall tone of the message (evaluative valence), and purpose. Shaffer and Zikmund-Fisher's (2013) narrative taxonomy provided a starting point for me to methodically examine the stories in a way that was literature-based and as reproducible as possible. I used their taxonomy to gain insight into the stories so that I could assign them storytelling function themes and match each to a rationality. Before assigning anything to the stories, I examined story content (Steps 1), and coded each story with two types of code: context and purpose (Step 2).

Context was used as a substitute for the evaluative valence discussed by Shaffer and Zukmund-Fisher (2013) because my study works with second-hand stories. Without the original audience, the overall tone of the message could not be assessed, so the context surrounding the storytelling was examined instead.

The setting from which the story was recalled emerged as an important factor from my conversations with participants and my advisory committee. The storytelling setting was examined during Step 2 to further assist with the assigning of functions and rationalities. Since the findings showed that the setting has some interesting influence on the stories, it is included as its own point in the discussion, alongside storytelling function and rationalities.

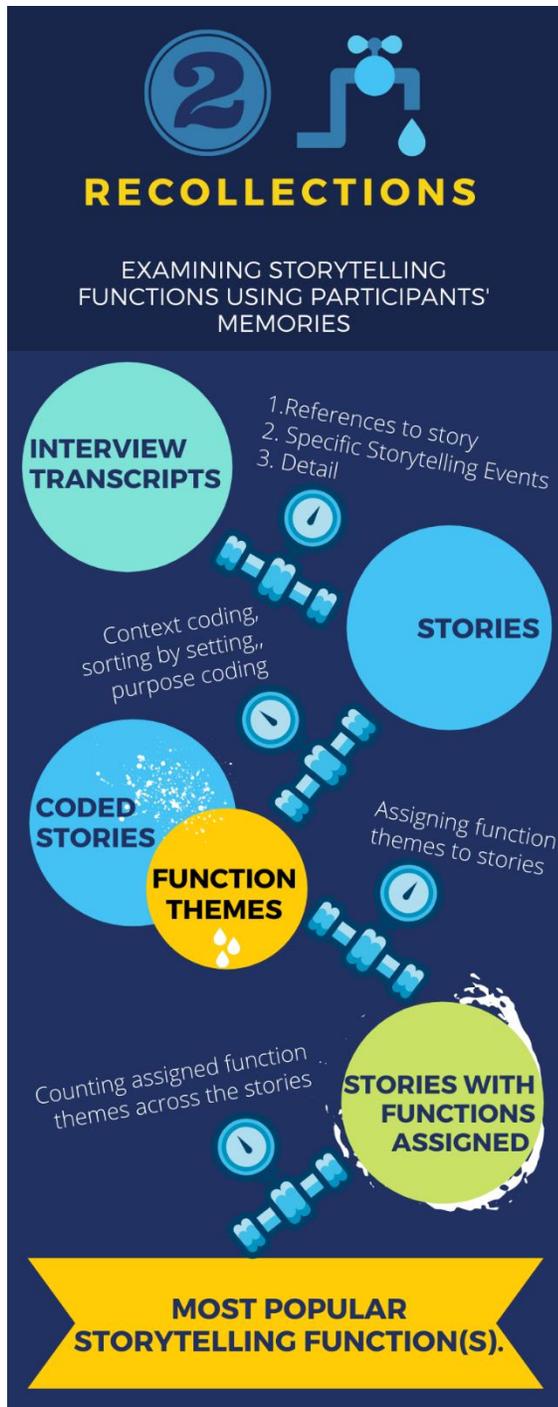


Figure 2.3 The second part, or 'Faucet', of the Three Faucet Framework for storytelling function: *Recollections*.

Ultimately, 18 stories were selected from the transcripts. Informed by codes derived from literature, the final 18 stories were assigned one or more function themes that were derived in the first Faucet. The steps below explain how I completed this part of the analysis.

1.9.1 Step 1: Stories

To broadly understand the ways participants perceived stories to be a part of SWP, I initially identified every Reference to Storytelling, totalling 150, and sorted them into categories—specific or generalized. I did this by reading through the story quotations and identifying those that described a Specific Storytelling Event. The others were categorized as Generalized Reference, referring to a type of story rather than an identifiable event. Generalized References to Storytelling were used to inform the rest of the analysis but were not examined beyond their context (Step 2).

Detailed Enough to be a ‘Story’: Next, I further filtered through the Specific Storytelling Events to select those that referred to “...actors who are placed in a temporal and spatial setting...” (van Hulst, 2012, p. 300). There were two reasons for further narrowing down the number of stories: it allowed me to focus on the most detailed stories for analysis; it ensured the stories would be analyzed based on a common definition, since storytelling can be a versatile idea. In the discipline of planning, van Hulst (2012) defined storytelling like this:

For something to be a story it should be built from events involving actors who are placed in a temporal and spatial setting. Telling stories is not just listing events. Through the specific way in which stories represent that [*sic*] what has happened, they emplot the past. (p. 300)

As indicated earlier, “emplot” is a term van Hulst uses to mean “...connect story elements in such a way that they form a coherent whole.” I used van Hulst’s definition of story for this research.

Using the matrix option in NVivo, a cross reference was made between Specific Storytelling Events and each of the two settings: professional and informal. I then re-examined each story resulting from this query to see which stories referred to actors in a time and place, a process which resulted in 18 final stories. The details in these stories allowed me to complete the rest of the analysis.

1.9.2 Step 2: Coded Stories

Coding for Context: Before context could be assessed, a cursory re-reading of the story content was completed for all References to Story. The goal of this review was to obtain a holistic overview of all the contexts surrounding storytelling events.

Context codes were then assigned to the 18 stories. For these codes I focused on the interactions that occurred during SWP. Representatives of different departments or jurisdictions on SWP committees meet, learn of, and manage water issues together. These interactions align with the concept of social learning discussed by Pahl-Wostl et al. (2007) for water resources management, so I based my context codes on the governance and environmental contexts they explore. The five available context codes were as follows:

- ❖ Governance structure/ legal,
- ❖ Governance structure/ organizational,
- ❖ Governance structure/ cultural,
- ❖ Governance structure socioeconomic, and
- ❖ Natural environment.

Stories often featured more than one context code. Context codes were identified in the stories themselves as well as in the transcripts surrounding them by reading and performing a word search. Key words in this search were selected based on conversations in the field and multiple auditory and visual reviews of the interview data.

Next, I provide a quotation from an interview as an example to illustrate the process of context coding. The participant was speaking about a story that was featured in an Indigenous Elder's address, preceding a SWP discussion about drinking water on their reserve: "A well spoken, statesman sort of person having given the opening prayer in Cree and then he immediately talked about how the water had changed..." (Interview 9). The code assigned to this quotation was *governance structure/cultural* because the description frames the speaker as a cultural leader. The storyteller was a "...well spoken, statesman sort...", and delivered a prayer, establishing a governance structure/cultural context before telling their story.

Sorting for Setting: The study site and participants of this research were chosen because of their affiliations with SWP planning, and the scope covered interactions that occurred during the development of SWP plans. In other words, a professional SWP setting was the initial scope of this research. Once the stories had been reduced to 72 specific stories, these stories were sorted for the setting in which they took place. A story was assumed to have occurred in a professional SWP setting if the participant who recalled it had served on a SWP committee or if the story was recalled from a SWP planning activity (i.e., meetings, fieldwork, community engagement). Each

story was sorted by setting, and seven stories were found to have taken place in a professional SWP setting.

After the first four steps, I reviewed the interview transcripts to check their interpretation and found that stories told in informal settings also appear to influence SWP. This considered, I expanded the scope to cover the informality of a storytelling setting. Some participants explicitly or implicitly stated that stories shared in informal settings have value, suggesting that stories shared outside the official SWP process may also contribute to SWP. I presented this finding to my academic committee, who advised that to be responsive to participants and conduct a responsible complete study, the same analysis should be performed on informal stories.

Stories that were either recalled by participants who had not served on a SWP committee or that occurred outside the professional SWP setting were coded as informal stories. This process yielded 11 stories shared in informal settings.

Purpose Coding: Purpose was examined as a key story quality based on the insights of Shaffer and Zikmund-Fisher (2013), who emphasize the importance of asking why particular narratives (stories) are used to aid decisions in healthcare (p. 5-6). To compile a list of possible storytelling purposes in SWP, storytelling literature from planning, sustainable development, healthcare, human rights, environmental and natural resource sciences, Indigenous water research, and community and geographic planning was reviewed, the most contextually-appropriate summarized below. Possible purposes were interpreted from the texts in Table 1.1 and then consolidated to form a codebook displayed in Table 2.3. With these codes I attempted to encapsulate the diverse backgrounds and expertise involved in SWP planning. The brief literary review of storytelling purposes can be amended to fit the needs of other research, adding to my framework's transferability. Interpreting storytelling purpose from these sources on my own does add a degree of subjectivity to the process, but I have attempted to be transparent by selecting sources appropriate for the study context and displaying my interpretations alongside them.

Table 2.3 Sources used to compile the purpose codes assigned to stories.

Source	Journal	Purpose for Storytelling (codes)
Jackson et al. (2014)	Ecology and Society	To share Indigenous historical knowledge for technical solutions.
van Hulst (2012)	Planning Theory	To inform; to share knowledge in planning.
Chin & Rudelius-Palmer (2010)	Race/Ethnicity: Multidisciplinary Global Contexts	To voice injustice: an attempt to heal by informing those in positions of authority.
Rudestam (2014)	Society & Natural Resources	To share LEK.
Sundin et al. (2018)	Environmental Evidence	To hear and understand perspectives of stakeholders in research; To disseminate knowledge to stakeholders.
Gearey (2018)	Sustainable Development	To communicate local concerns; To build a narrative with locals.

Coding was performed using the highlight function in NVivo QAS to identify the story in the original transcript and search the text before, within, and after each story for key phrases alluding to why it was shared. Also, when a participant spoke of why a story was shared, this quotation was highlighted for reference. Then, guided by the descriptive words and verbs chosen by the participant, I chose the purpose code(s) from Table 2.3 that best suited the story. To add another layer of rigor, each story's context codes were also used to guide this process.

Below I walk the reader through the purpose coding for the same story I used to explain context coding. To recap, this story was told by an Indigenous Elder in an address that preceded a SWP discussion about drinking water on their reserve:

That was really a strong message coming from an Elder... very clear concise description of how the water has changed and how people are now sick in the community where they never used to be sick before. So those sorts of stories are really powerful.
(Interview 9).

The story's context code was *governance structure/cultural*. This context, the possible purposes in Table 2.3, and the word choices in the above quotation can be used to interpret why it

was told. The participant recounts the way the Elder originally told their story using the descriptive words “strong...clear concise,” and “powerful.” These words effectively engaged the listener with the storyteller’s *local concerns*. The participant also describes the story as one of change and highlights community sickness, suggesting it was shared to *inform* and *voice injustice*. Thus, in total three purposes were assigned to this story: *inform*, *communicate local concerns*, and *voice injustice*.

1.9.3 Step 3: Assigning Function Themes to Stories

The results of all prior steps contributed to this step. Recall that the first Faucet of the framework yielded 11 function themes. To revisit the logic that brought the analysis to this point, with the Three Faucet Framework I sought an understanding of storytelling function beyond the cursory overview that thematic analysis provides. Bazeley (2009) argues that thematic analysis is a “garden path that...can take the reader along a pleasant pathway that leads nowhere” (p. 9). This step is where we see where the “garden path” leads, determining which storytelling function themes were most supported by the stories. One or more of the 11 available function themes were assigned to all 18 stories by reading and listening to each for good measure. I also relied on each story’s context and purpose codes to provide a deeper understanding of its function(s) in SWP. The interconnections between codes and themes are elaborated in example below.

If a story was particularly complex, it usually had more than one context or purpose and function theme. The story example in Figure 2.4 below is one such case. This particular story was chosen as an example because throughout it we can observe several of the many codes and function themes that were made available by earlier steps to describe each story.

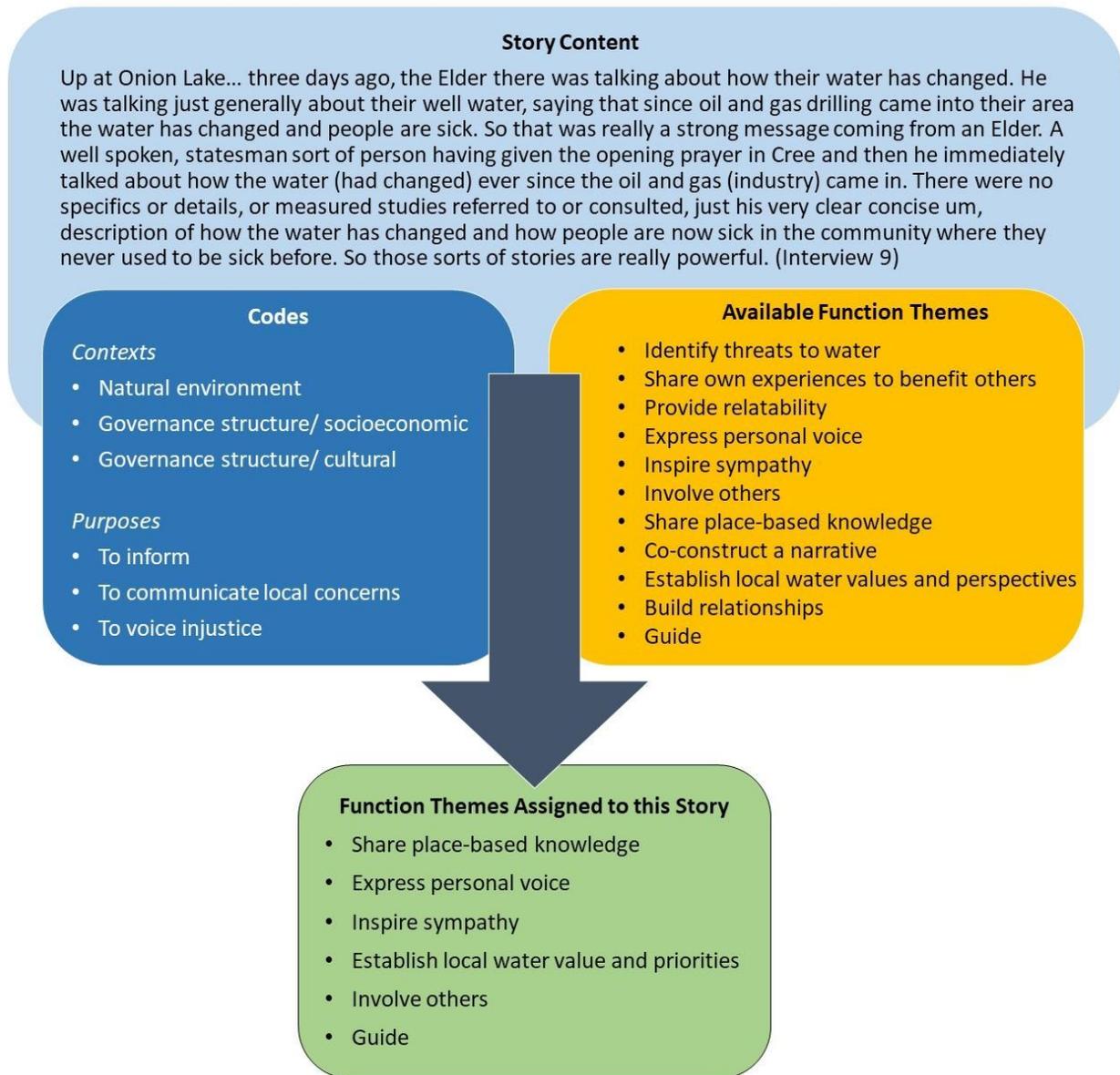


Figure 2.4 Case example of assigning function themes to stories.

To elaborate on the above process I will explain how just one of the function themes was assigned to this story. The theme *share place-based knowledge* was assigned to a story when the original storyteller relayed information gleaned from their experience at a specific location, sharing knowledge of water problems that had an impact on some place they were well acquainted with, such as their home or that of someone close to them. In the above case example the storyteller conveys knowledge of their water quality changing over time. Stating this and implicating the source of the problem -oil and gas- suggests they have the kind of knowledge that

is formed by knowing a place very well. Next, consider how directly the two codes *natural environment* (context), and *to inform* (purpose) align with the theme *share place-based knowledge*. To share place-based knowledge is *to inform* someone about a place, which speaks to the purpose code. The place in question is described in the line “...since oil and gas [came] into their area the water has changed”, which can be interpreted to refer to the *natural environment* that provides drinking water to the storyteller’s community.

Counting Assigned Function Themes: Once function themes were assigned to each of the stories, they were counted to determine which functions were more common (popular) than others. This effort to measure theme frequency was an adaptive step. I decided this addition was necessary once more than five themes began to emerge because their existence presented too many avenues for me to adequately explore in one study. This addition to step 7 allows my research discussion in Chapter Four to focus on the theme that matched best with participants’ memories. My reasoning is that if participants talked a lot about a certain function theme, and that theme lined up with the stories they remembered, it most likely plays a role SWP. I could have taken another direction and gone on to explain how each theme individually contributes to scholarship. However, there are other findings to discuss from this analysis, this is the first study on storytelling to be done on SWP, and it deals with second-hand accounts. Therefore, I am choosing to focus on the results that most likely represent true events, the most popular function theme. I do, however, provide material for future research by unpacking the themes at length in Chapter Three using every one of the quotations that formed them in Step 3.

1.10 Value

This third Faucet of the Three Faucet Framework was designed to determine if storytelling has the potential to encourage clumsy solutions. I developed this Faucet by pulling together literature on both storytelling and cultural theory and then applying their overlap to this study’s interview data.

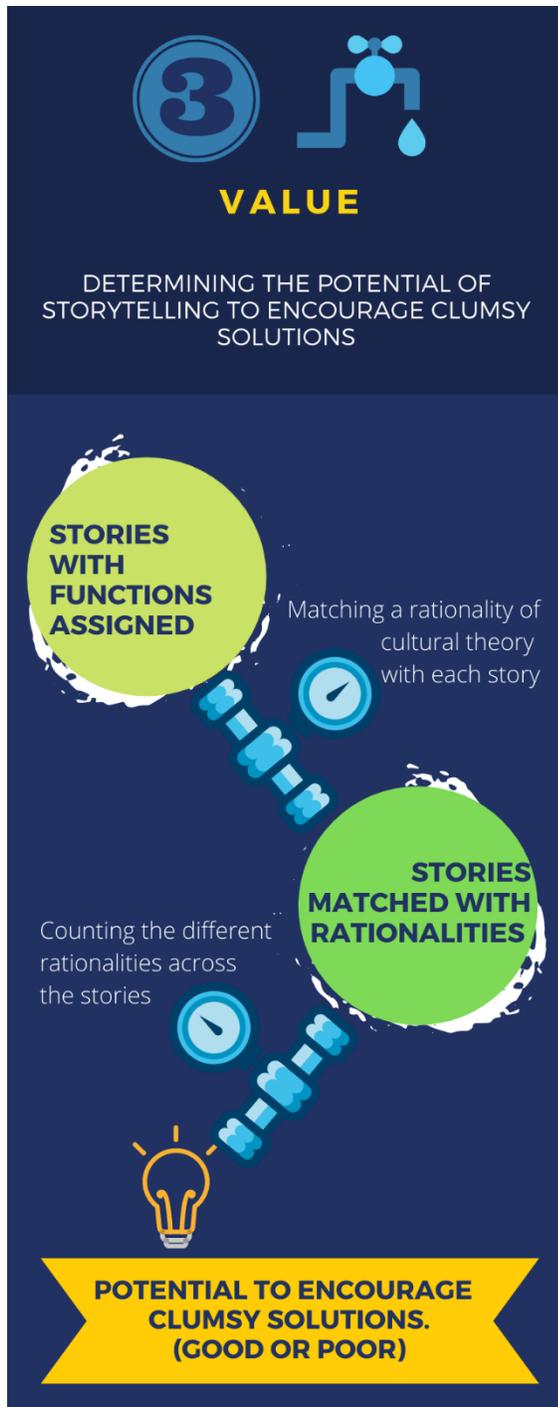


Figure 2.5 The third part, or 'Faucet', of the Three Faucet Framework for storytelling function: *Value*.

Cultural theory has been used in the past by water scholars such as Beck et al. (2018) to find innovative solutions by hearing alternative viewpoints, applying the idea of 'clumsy solutions' to water problems. Clumsy solutions are theoretically better than other solutions

because they use plural rationalities in a team effort. Clumsy solutions harness the contention between conflicting viewpoints to uncover innovative alternatives to a problem (Beck et al., 2018), capitalizing on the strengths of people with different mindsets, training, cultures, and/or ages.

A rationality is a way to perceive information about a situation and form knowledge from it. Put simply, a rationality is not a worldview; it is a lens of understanding used in a given situation. Someone can approach different problems or opportunities in their lives using different rationalities depending on their past experiences or education. Thompson (2018) presents five possible rationalities: hierarchy, individualism, egalitarianism, fatalism, and autonomy. I have summarized each rationality in Figure 2.6 to introduce them. These summaries are oversimplified interpretations. Each rationality is methodically assessed using literary sources in the next section, but first it is important to establish a holistic understanding of them.

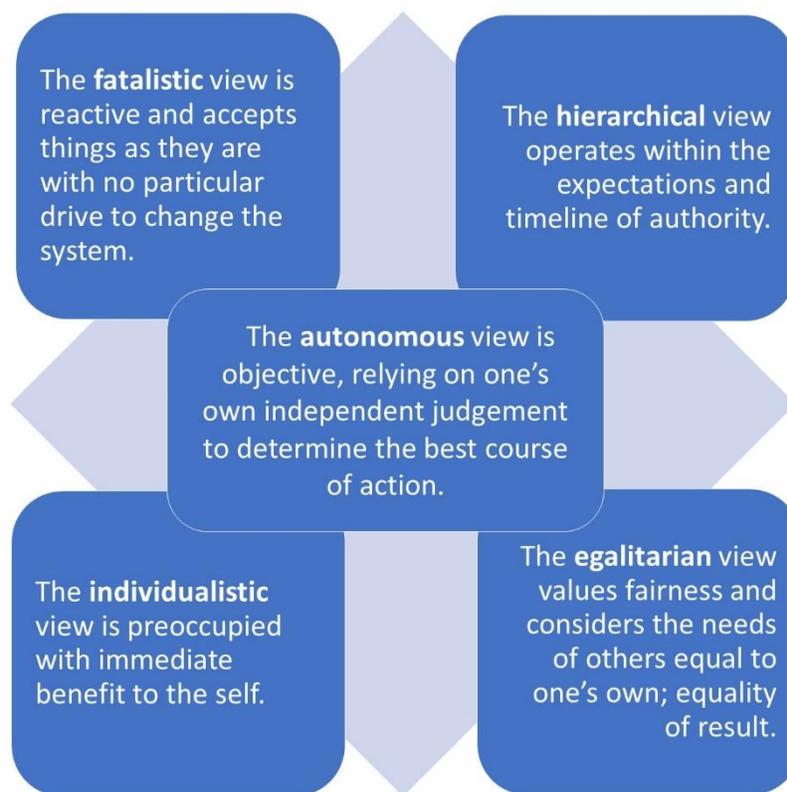


Figure 2.6 *The five rationalities of cultural theory summarized by the researcher.*

In their summary of storytelling in planning literature, van Hulst (2012) explains that people can tell stories to present conflicting views. To relate van Hulst's observations to water planning, Douglas et al. (2019) argued that "planning occurs in settings where there are multiple

worldviews and many different ways of relating to water.” (p. 364). Considering these insights, I was able to recognize different viewpoints emerge by looking closely at how participants recalled their stories.

As we have seen, there is a wide variety of actors who collaborate to complete SWP plans. Coming together from different cultural and professional backgrounds, the actors contributing to SWP almost certainly possess a variety of viewpoints, so any stories they share are likely to also promote a variety of viewpoints. If several different rationalities could be matched with participants’ stories it would confirm that storytelling encourages clumsy solutions in SWP. The rest of this section explains how I matched different rationalities with the stories from the second Faucet of the analysis.

1.10.1 Indicators of Rationality

A rationality was matched with each story based on the words chosen to tell it (content). Drawing from various literatures on cultural theory, I searched for the content of each story in the data for certain indicators that point toward one rationality or another. Schwarz and Thompson (1990) discuss cultural theory in the context of environmental risk and are cited here for three indicators they ascribe to each rationality: **myth of nature**, **perception of time**, and **desired systems properties**. These key indicators were selected from Schwarz and Thompson (1990) and interpreted for each story with guidance from Thompson (2018) and Thompson, Ellis, and Wildavsky (1990) to see which rationality matched the story best. The indicators and corresponding rationalities are outlined in Table 2.4 below and explained afterward.

Table 2.4 *Indicators of rationalities of cultural theory (Ellis & Wildavsky, 1990; Schwarz & Thompson, 1990; Thompson, 2018).*

Rationality	Indicators		
	Myth of Nature	Perception of Time	Desired Systems Properties
Individualism	Benign	Short term	Exploitability
Hierarchy	Tolerant	Short or long term	Controllability
Egalitarianism	Fragile/ ephemeral	Long term	Sustainability
Fatalism	Capricious	Illusion	Copability (ability to cope)
Autonomy	Resilient	Eternity/Now	Resilience

Myth of nature is about a person's attitude toward their natural environment such as the weather, hydrology, and surrounding geography (both modified and wild). According to Thompson (2018) and many other works on cultural theory, people may understand nature as benign, tolerant, fragile, capricious, or resilient to the actions of humans. When a story referenced animals, weather, local hydrology or another force of nature, these references served as clues to the myth of nature it supported. This indicator of rationality was selected because in SWP people make decisions about water, a feature of nature, as well as the larger natural environment.

Perception of time refers to the timeframe on which a person focuses their actions. A story could be about the short term, long term, eternity, or none of these. If a story's timeframe was restricted to a week or a season, this was considered short-term, while a longer period, such as a lifetime, was considered long term. The perception of time indicator was chosen because Step 1 had ensured that every story that reached this point had some reference to time.

Desired system properties are about the system under discussion and how a person believes people and resources should be managed within this system. In this research, the system under discussion was usually community-environment interactions with a focus on water. The options for this indicator are exploitability, controllability, sustainability, copability, or resilience. The desired system properties indicator was selected because the extent and nature of water regulations and management are central to SWP discussions.

Once myth of nature, perception of time, and/or desired system properties were found within the story, the corresponding rationality was matched with it. To match a story with a rationality, I read through its content several times and searched for phrasing that corresponded with one of the rows in Table 2.4. I highlighted phrases alluding to each of the three indicators of rationality and labeled them. The word choice of participants was integral in this step. Snippets of stories from the data are shown in Table 2.5 below, to display the indicators of rationality within each story. Two rationalities are not included because only three out of the five rationalities emerged from the stories.

Table 2.5 Coding framework to match rationalities to stories using cultural theory.

Story Example	Indicator			Rationality Matched
	Myth of Nature	Perception of Time	<u>Desired System Properties*</u>	
The value of their property was deteriorating, so the cabins –the older cabins weren't able to sell their cabin for what they paid for it in the first place or what they thought it was worth when there was water there. So there was a lot of angst with a lot of people. (Story P16.2)	Benign	Short term	Exploitability	Individualism
They were pesticide drums, those steel drums. I'm not exactly sure what year they were dumped there. It might have been in the seventies where we really didn't recycle, steel drums that contain pesticides so people would just dump them. <u>But now there's a program for that.</u> So people don't dump them anymore -and <u>there's some legal ramifications and regulations</u> around it. (Story P15.3)	Tolerant	Short or long term	Controllability	Hierarchy
It's stories saying that (drainage) caused some of the issues. <u>They drained</u> some of the lake or, some channels to lower the level at that lake, and [they] got a lot of the water. But again, they should have been talking, before – or even now. This is this whole process of doing some of these projects and you know where water's coming from. (Story P2)	Fragile/ Ephemeral	Long term	Sustainability	Egalitarianism

*Desired System Properties were underlined within the stories to prevent confusion from overlap with other indicators.

Upon this Faucet's completion, if I had matched all five rationalities to stories in the data it would have confirmed that storytelling has the potential to encourage clumsy solutions in SWP. However, this study is limited to 16 interviews, the perspectives of those 16 participants, and my own interpretations of them. If only one or two different rationalities matched with the stories that would not rule out that others are conveyed through storytelling beyond this study. What I could conclude was this:

If several but not all five rationalities were observed across the 18 stories, that would be considered good potential. If only one rationality matched with the stories, the data would indicate storytelling has poor potential to encourage clumsy solutions. The important takeaway is that I checked the data to see if people in SWP are sharing stories that promote more than one rationality. In short, the greater the number of different rationalities reflected by the stories, the greater the potential that storytelling encourages clumsy solutions, and the more value storytelling offers to SWP. Finally, it is important to consider that storytelling may also encourage clumsy solutions indirectly by facilitating an exchange of rationalities. That is, rationalities do not have to be contributed only through stories, although stories may help to facilitate that dialogue.

1.11 Chapter Two Summary

Using the Three Faucet Framework in a layered approach, I identified themes of storytelling function, assigned these to recalled stories, and checked for different rationalities among the stories. To inform my analysis I drew primarily from healthcare decision-making (Shaffer & Zikmund-Fisher, 2013), social learning in water resource management (Pahl-Wostl et al., 2007), planning (van Hulst, 2012), environmental evidence (Sundin et al., 2018), racial justice (Chin & Rudelius-Palmer, 2010), environmental sciences (Gearey, 2018), and cultural theory (Thompson, 2018). These sources were selected by searching the literature that not only focused on the diverse actors involved but also by prioritizing those that shared some context with this work's study site and participant network.

My framework produced 11 themes of storytelling function and 18 stories. These stories were assigned contexts, purposes, and function themes, sorted by setting, and matched with a rationality. The 11 themes of storytelling function were analyzed from the interview transcripts and matched with 18 stories recalled by participants to determine which were most popular in participants' memories. A rationality was matched with each story to determine if storytelling has

a good or poor potential to encourage clumsy solutions. Overall, the process allowed me to determine common settings, function themes, and rationalities for the storytelling in SWP. The findings and their implications are discussed in Chapter Three.

CHAPTER THREE: FINDINGS ON THEMES, RECOLLECTIONS, & VALUE

This chapter describes the results of the analysis in Chapter Two. The findings follow the sequence of my analytical framework (the Three Faucet Framework of storytelling function), and therefore are segmented into three “Faucets”: i) Themes, ii) Recollections and iii) Value. Included in these results are the 11 storytelling function themes, common settings, common functions, and rationalities matched with the stories recalled from SWP.

Here I present my findings after methodically interpreting the experiences my participants were willing to share. Let the reader be reminded that these findings are my interpretations of others’ experiences of storytelling. I do not present details on the original storytellers as they were not the focus of this research. As stated in Chapter One, an advantage of this ‘second-hand stories’ approach is that it provides a way to eliminate the stories which aren’t memorable and selects storytelling events that are. Knowing details about the original storytellers would be valuable, but that is not the scope of this research.

1.12 Themes: Functions of Storytelling in SWP

The 11 storytelling function themes that emerged from the interview transcripts are displayed in Table 3.1 below. Each function is accompanied by a descriptive quote from the interviews edited to an intelligent verbatim transcription standard (see Chapter Two). I developed the themes by coding the interview transcripts, guided by the literature outlined in Section 2.5 of Chapter Two. Each theme of storytelling function is unpacked at length in this section using the interview quotes that they evolved from. Participant alias’s match their Interview number, which are marked in chronological order: 1, 2, 3 etc.

Table 3.1 *Themes of Storytelling Function and feature supporting quotations. Themes were identified using the transcripts of all 16 participants.*

Function Theme	Feature Quotation
Identify threats to water	This is the trick. We're kind of there filling in the boxes... your questions are going to give me thoughts and ideas right? So it is iterative [and] we're both benefiting from this exchange. I've never had a recorder at the meetings [for] those stories that are told. If you asked me, what's a threat to my water supply, when that question comes up at the meetings it's not just factual, like the water cisterns are in bad shape. There's always a story to it, you know? (Interview 9)
Share own experience to benefit others	Often we do take things for granted. When there are no problems with the water today, we start taking that for granted again. That's why I think it's important to share our stories. Because in the future we may have additional problems, there being too much water or maybe too little water and so we need to prepare for that as a community. (Interview 3)
Provide relatability	When you talk about water because of people's perspectives and how they connect themselves to a certain risk or to a certain source, those connections and those stories are an important way of opening up into what other risks might be. (Interview 4)
Express personal voice	Start telling your story. I guess it's [often done by] those who don't really care what people think. You just have to. You've had enough already of nobody listening or anybody doing anything and you have to tell your story so others know. (Interview 2)
Inspire sympathy*	He was talking generally about their well water, saying that since oil and gas drilling came into their area, the water has changed, people are sick. So that was really a strong message coming from an Elder. There were no specifics, details or measured studies referred to or consulted. Just his very clear, concise description of how the water has changed and how people are now sick in the community where they never used to be sick before. Those sorts of stories are really powerful. (Interview 9)
Involve others	This is what I'm hearing out there. It's something maybe you should take more interest in, and maybe [you should] go to some of these events as well. (Interview 2)

Share place-based knowledge	I used to laugh and they'd talk Cree and -it sounded more funny when they talked Cree- but I could just picture them trying to run out [of the water]. But yeah [dad] kept the water [clear]. There are beaver dams all along this creek and if it's not kept open we're going to have problems. That creek comes right through here. We're having problems at the clinic because of the creek is right there. (Interview 6)
Co-construct a narrative	It would be, you know a family member, or this happened to my neighbor, which created that evolving story that someone else would give some input and they would continue with. (Interview 1)
Establish local water values and priorities	I think storytelling is valuable because, as I've facilitated source water protection plans so far, it's perceived threats. But when you talk about water because of people's perspectives and how they connect themselves to a certain risk or to a certain source, those connections and those stories are an important way of opening up into what other risks might be. (Interview 4)
Build relationships	I think when people share their experience and their stories with honesty and openness in a way that doesn't present a sort of tone that is finger pointing or aggressive, or even a gesture in terms of mannerisms, I think stories and experiences can go a long way in terms of bridging relationships. (Interview 15)
Guide	I think that sharing stories is integral to appreciating and respecting water now more than ever. Because now with climate change and all these other factors that are influencing the environment, the lands, the waters, you need to have that appreciation so that you can protect it and take care of it. (Interview 8)

*Sympathy is defined by the Merriam-Webster Dictionary (2020) as “the act or capacity of entering into or sharing the feelings or interests of another”. Empathy is defined as “... vicariously experiencing the feelings, thoughts, and experience of another...”. This term is defined here because “Empathy” was initially considered for the title of the *Inspire Sympathy* but not selected because it would require some indication the participant had “vicariously experienced” the feelings of the original storyteller. The researcher was unable to reliably interpret “vicarious experiences” from audio recordings of second-hand accounts.

1.12.1 Theme Emergence and Thematic Saturation

One way to ensure that enough data has been collected is to determine if new themes stopped emerging before the end of the interview process, that *thematic saturation* has been reached (Creswell & Poth, 2016). The Three Faucet Framework is an iterative process. Although thematic saturation is an analytical tool, I used it to introduce the findings in this Chapter because it required the results of the first Faucet in the framework.

While performing the thematic analysis I recorded each new theme of storytelling function and the interview where it first emerged (Figure 3.1). Most themes of function emerged in the first two interviews. No new themes appeared after interview nine, indicating that thematic saturation was reached at that point. I say with confidence that 16 interviews were sufficient to identify themes of story function in this group of participants.

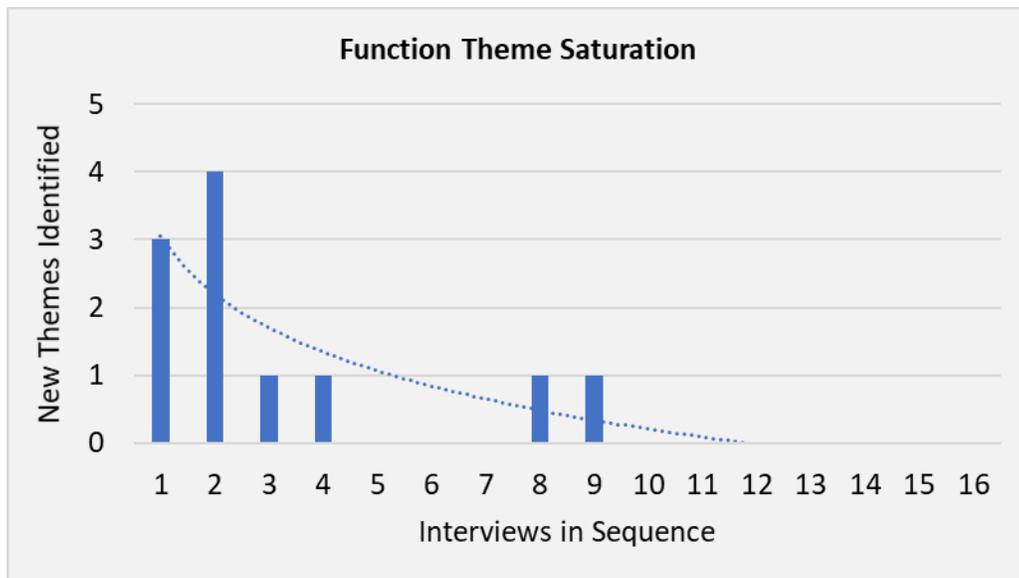


Figure 3.1 Visual display of thematic saturation for storytelling function themes across 16 interview transcripts

Reflecting on the emergence of themes is informative but does not explain much about which themes were discussed by each participant. Figure 3.2 displays the spread of quotations supporting each function theme according to the interview (and participant), providing a visual how much each participant focused on each theme.

STORY FUNCTION	TRANSCRIPT																Total
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
Express personal voice	0	1	0	3	0	0	0	0	1	1	1	0	0	0	3	2	12
Share place-based knowledge	0	3	2	3	0	2	0	1	1	0	0	0	0	0	0	0	12
Establish local water value and priorities	0	0	0	5	0	0	0	0	1	0	0	0	0	0	4	1	11
Identify threats to water	1	2	0	3	0	0	0	0	2	1	0	0	0	0	2	0	11
Build relationships	0	0	2	3	0	0	0	0	0	0	0	0	0	0	1	0	6
Involve others	0	2	3	1	0	0	1	0	0	0	0	0	0	0	0	0	7
Inspire sympathy	0	0	0	0	0	0	0	0	2	1	0	0	0	0	3	0	6
Provide relatability	1	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	4
Share own experience to benefit others	0	2	1	0	0	0	1	0	0	0	0	0	0	0	0	0	4
Co-construct a narrative	2	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	4
Guide	0	0	0	0	0	0	0	2	0	0	0	0	1	0	0	0	3
themes/min	0.10	0.10	0.19	0.24	0.00	0.04	0.08	0.09	0.15	0.12	0.05	0.00	0.02	0.00	0.37	0.13	

*0.00 themes/min indicated that the participant did not contribute quotations to the thematic analysis.

Figure 3.2 Function theme distribution as supporting quotations for each theme were identified across the 16 interview transcripts

As explained earlier, thematic saturation was reached at interview nine. What is reassuring is that references to story function continued to be identified after interview nine, indicating that my execution of the thematic analysis was consistent and not biased by the order in which I interviewed participants. In the above figure “themes/min” represents the number of times a theme-supporting quotation was identified for every minute of the interview. This frequency of references to different themes was calculated because the interviews ranged in duration. What is interesting about this spread of themes is that some participants made reference to the storytelling function themes more frequently than others. Interviewees 15 and 4 clearly contributed more quotations during the function theme analysis, suggesting that some actors in the network are either more familiar with or receptive to the way storytelling is used in SWP. Information on which participants recalled and provided stories for the analysis is covered in Section 3.2.

1.12.2 Function Themes Unpacked

According to the arguments made for storytelling in planning by Throgmorton, Sandercock, and van Hulst (2012), stories can have a variety of purposes in planning processes. This section dives into each of the 11 storytelling function themes through the words of participants. It concludes the first layer of the Three Faucet Framework and the first step in answering my research question. The themes were formed by determining what participants’ said storytelling can do in SWP. For each theme I have provided a brief explanation and a report of all quotations that were identified in the transcripts as supporting evidence.

Throughout this section the reader will sometimes observe the same quote more than once because each quotation may support more than one function theme. By alluding to more than one theme in a single quote, participants confirmed my first finding that storytelling performs more than one function in SWP. The ability for storytelling to perform more than one function simultaneously is a finding discussed in Section 3.2, Recollections. During interview dialogue, participant ideas about story function often flowed in multiple directions, intertwining several functions within one expression. Also, some themes are discussed by participants more often than others and this may reflect their personal interest, or favouritism so it was not used to assess which storytelling functions are more common in practice. Common storytelling functions were determined in the second Faucet of the Three Faucet Framework by looking at what kind of stories participants could recall from experience (see Section 3.2).

Identify Threats to Water: Local testimony can supplement technical knowledge of water in a landscape. For example, Simm and Samuels (2006) have explored stories as a tool in flood risk management and found that “personal testimony supported by physical evidence” (p. 8) may help assess the timing and magnitude of past flood events. Flood events pose significant risk to drinking water (Delpla et al., 2009). The following quotes from the interview transcripts speak of stories and their capacity to identify threats to water. The first two quotations recall how people tell of recent events to raise alarm for water quality. At a broad scale, the following participant refers to the “driving forces” behind their concern.

I guess you could call them driving forces, or upstream factors. In relation to stories and in terms of contamination, I have heard similar stories around people dumping chemicals into water bodies in communities without their knowledge. I've heard that among different communities. (Interview 15)

Whether or not the stories that participant recalled are true, they argue there is a perception relayed through community storytelling that careless or mal-intentioned people pose a threat to drinking water. Next, the same participant indicated that sometimes stories identify water quality threats by focusing on other uses of water.

I remember hearing several times from different community members across Saskatchewan that their concern with water contamination is affecting their traditional practices and utilization of the water sources within their communities. Not only for physical health, but for cultural and spiritual ceremonies. (Interview 15)

Stories of cultural water value often overlap with concerns about human health (Szach, 2013). The next quote revealed that expanding a SWP discussion to include the community’s primary concerns can emerge through storytelling.

I think storytelling is really valuable for setting a foundation of understanding and values. Sometimes I can tell right away that a community is more concerned about their wetlands than their aquifer. That’s something more valuable to them for wildlife. So I will say, look, for my own initiative I’ll include the aquifer to identify risks there. But I made a concession to include discussion and action items that will improve water in the wetland or the creek. Because that’s clearly important to them and that’s how they view water. Even though that’s not their drinking water. (Interview 4)

Ignoring this community's wetland concerns may have been interpreted as disrespect and would have likely closed off any opportunity to discuss aquifer management. Listening to their stories was likely an integral part of their SWP plan's completion. Once dialogue begins to flow people are reminded of their experiences, better able to recall and relay stories about those experiences for a more complete list of threats to water, as seen in the following quote:

[It's about] traditional knowledge and experiences of the landscape. They'll say oh well let's include that in the plan now because we know that there's a stockpile of batteries over there or, this is the drinking grounds and people party [there] and it's right by the lake on sandy soil so we don't want it [contaminated] or, there's all these random vehicles over here. (Interview 4)

In the above quote, the participant described a positive relationship between sharing personal experiences and enumerating threats to water that could be added to the SWP plan. The next quote further affirms this association by referring to a "kind of story" that reveals knowledge about threats to water:

[They will say], "we know that [the sites] were here, and here. We might not be able to decommission them since it's a million dollars a pop, but we can GPS them and assess." Through that kind of story [that is] making connections from this to that on the landscape, we're able to broaden the scope of risks or threats included in the source water protection plan. Since I'm a stranger I always say, I don't know your landscape, I don't know anything about this reserve. (Interview 4)

That participant also observed that the scope and scale of threats are influenced by sharing stories. The next two quotes suggest that when professionals are identifying threats to water with community members, stories may be the dominant mode of communication:

This is the trick. We're kind of there filling in the boxes... your questions are going to give me thoughts and ideas right? So it is iterative [and] we're both benefiting from this exchange. I've never had a recorder at the meetings [for] those stories that are told. If you asked me, what's a threat to my water supply, when that question comes up at the meetings it's not just factual, like the water cisterns are in bad shape. There's always a story to it you know? (Interview 9)

As the next quote revealed, it appears that consulting with community members prompts a natural evolution of storytelling about the area:

That's a concern so, when did this happen? Oh it happened in 2012, or it happened in 2005. Then that story kind of translates into an example of what happened, or when it happened another time. Okay so we'll record that one. Yeah so it's not just the wells on the river, it's always the wells on the river because something happened.... And then we record it as a problem, a potential issue. (Interview 9)

During Interview 2 it became apparent that sharing historical knowledge can validate or correct preconceived understandings about local hydrology. It speaks specifically of flooding, which can pose all kind of threats to drinking water such as mobilizing contaminants that would usually be in dry areas and away from drinking water sources:

[Locals] looked at [the map] and thought, this is what happened, this year, in this area. And looking at the map and saying “no, the water doesn’t flow this way it flows that way. There were some alterations on the land that caused areas to flood because it was man-made in the past.” There’s a lot of that information that’s been documented, I think in a report. (Interview 2)

Those present at the SWP meeting used their memories of past hydrological events to form a more complete picture of local hydrology and what to prepare for. Participant 2 also made the point that the longer someone has lived in a place, the more stories they have to share about it. They argue below that the SWP plan under development needed to be written with local input rather than presented to the community for scrutiny after its completion.

That’s how we thought about it. Who knows better than people who have lived through it? Lived through some of those events to get that local knowledge. Because how do you ground-truth once you have a plan and say, this is what we think is going to happen [with the water] but they say no, that’s totally wrong? (Interview 2)

Although this last quote does not explicitly refer to stories, it affirms that local memory is crucial when mitigating potential risks to or from water. Whether they indicate calls made to report chemical pollution, begin a discussion of aquifer contamination, recall vehicle dumping, or describe past flood events, stories can aid SWP by *identifying threats to water*.

Share Own Experience to Benefit Others: If a strategy to protect drinking water was successful in one community, it might work in another. Sometimes a person tells a story about a water problem they have encountered to help someone who is facing similar challenges. The concept of sharing one's own experiences to benefit others, specifically by older adults is a well-studied concept known as generativity, and has been explored through mediums of autobiography and behavioral acts by McAdams & de St. (1992). In the following extracts, participants spoke of sharing stories, not only to remember lessons learned from dealing with water issues first-hand, but also to share these lessons with others. Participant 3 argued that stories can be used as a tool to prepare a community for future water problems:

Often we do take things for granted. When there's no problem with the water today, we start taking that for granted again. That's why I think it's important to share our stories. Because in the future we may have additional problems, there being too much water or maybe too little water and so we need to prepare for that as a community. (Interview 3)

The benefit of a community's experience with managing water may not be exclusive to the community. As Participant 2 explains next, stories about personal circumstance can be shared with neighbours, too:

Tell your story and say, this is why I think my well has gone dry, and maybe that's why you get involved. Because how else are you going to make change? Unless you try to do it yourself, try to help. Try to help other people so they don't have that same issue. I'd say that's probably a big thing. That's why I do this is to share. Share your ideas so that somebody else doesn't have to experience it. Or help them see through it or figure it out. That could be why these things are happening. (Interview 2)

As this quote shows, sharing your own story might help others avoid the trials you have been through. Sometimes the local lessons from one community's ordeal can have broader implications:

It's only going to help. You know if you just keep it to yourselves, it's only going to affect your community... But if you want to help your, well I was going to say the world because water is all around, right. And that's what keeps us alive. You have animals, and what do we do as First Nation people? Go and hunt the animals. And if you're not treating your water systems right, the animals will drink the dirty water and they get affected. And you

know, put it on the table and eat it, you get affected. So it affects everybody. So, it's just common sense to share that knowledge...with everybody. (Interview 7)

Thus, in recognizing water as a shared resource that “affects everybody,” sharing knowledge about water and health beyond one’s community benefits everyone. This theme was tied together by the following quote, which approaches the sharing of experiences through story from a listener’s perspective:

I think you have to hear everybody’s story and you have to understand that they’re not saying it for no reason. That there’s something in the back of their mind that’s why we should see the bigger picture, should be thinking about their common interest. Even oil and gas and things that are happening in the west of the province, I think that everybody should listen to it. Of course yeah, west of Saskatchewan. I think that because it could happen here as well. You have to hear their story so that you’re planning ahead. (Interview 2)

This quote emphasizes that listening to others’ stories can help one anticipate problems and plan for the future. Sharing stories can assist others with SWP by describing solutions that have worked in the past and the early warning signs of trouble to come. It appeared that participants found the concept of sharing and gathering water knowledge from their past experiences to be second nature.

Provide Relatability: As Bayer and Hettinger (2019) contend, “People connect what they hear from stories to information and experiences in their own lives.” Water is a part of everyone's life, so it is not unreasonable to think that one person’s water testimony may sound familiar to someone else. The following quotes support the idea that sharing stories can cause those present to find common ground with one another. Swapping stories upon first meeting can help people gauge how their input will be valued in the business to follow:

If we had that general discussion first, shared stories, then that one participant would have found ways or would have thought about what she can do, whether as an individual or through her work. How she can better connect to water and realize that she does know something about water. By sharing stories sometimes you realize your connection to the story being told. (Interview 3)

This participant argued that story sharing at the beginning of a project can help those present connect to the concept of SWP, improving their ability to contribute to the plan. Making allowances for varied backgrounds and communication methods can draw out more input:

Researcher: Do you think that it was important to listen to the stories people had to tell?

Participant: Well absolutely. Personally I went in with the perspective of yeah, okay I have a list of questions [about water] and we'll just blow through this. But once I actually got there I realized that my questions weren't overly relatable to the situation. So it was best to ask a question and it would get comments from different people. I learned way more from them than they did from me. (Interview 1)

By recognizing the comfort with which locals shared knowledge through story, Participant 1 agreed to meet them on familiar ground. Another participant indicated that when they hear stories about places or events they recognize, people may contribute to the conversation:

When you talk about water because of people's perspectives and how they connect themselves to a certain risk or to a certain source, those connections and those stories are an important way of opening up into what other risks might be. (Interview 4)

While stories connect people to water issues, they may reveal similarities among those present. The next quote supports the argument that we naturally try to draw connections between ourselves and stories we hear:

That is [a] value of storytelling as well, that those who are listening usually find ways to connect with the story you're telling. What do they have in common? I think that's a good [method] of finding ways to start to work together, realizing that we often do have a lot in common but we just think about our differences. (Interview 3)

Thus, stories told during SWP can *provide relatability* for those involved by addressing water in an everyday context, helping people understand their connection to water quality. The above quotes also suggest that putting SWP in relatable terms is important because it may help people remember relevant information.

Express Personal Voice: Local initiative can play an important role in the success of watershed management (Brasier et al., 2011). Sharing stories to *express personal voice* can

indicate local investment in water quality. The following quotes speak of individuals using stories in their (personal) pursuit of justice, to receive acknowledgement, or for some benefit to their personal situation. The first refers to instances where the intention behind a story is not immediately apparent, even to the storyteller:

Start telling your story. I guess it's [often done by] those who do don't really care what people think. You just have to. You've had enough already of nobody listening or nobody doing anything and you have to tell your story so others know. (Interview 2)

As this quotation shows, sharing one's own story provides a personal lens for others to consider the impact of past events, even if it only tells one side of the story. Participant 15 noted this as well in this next reflection. "In that specific case I guess it was his story. It was about him and his experience with flooding in relation to the evacuation... He centred the story around himself." (Interview 15). As revealed in the next exchange from Interview 11, considering the personal stories of several individuals about the same issue can make a difference when resolving water disputes:

Researcher: Do you hear stories from people who are trying to make their case?

Participant: For or against drainage? That's mostly what I deal in, one farmer complaining against another. Somebody's drainage impacts somebody else's acreage, right. (Interview 11)

In that example, the two farmers complain but do not appear willing to listen to each others' stories. As the next extract from one of the participants indicates, if others are just as willing to listen as there are to speak, sharing water experiences from a geographical area can add up to paint a complete picture of a watershed.

I think people come into a group and they have their own personal perspectives and they have their own personal experiences. By sharing those people can listen and broaden their understanding of the lake, or the watershed. I'm not sure what works and what doesn't work, and I'm not sure what I would say works and doesn't but I think the more you communicate between each other the more, the better people's understanding of the watershed is going to be. (Interview 16)

Thus, people can experience a watershed in multiple ways, but their combined stories make for a more complete understanding. The following exchange with Participant 10 indicates that when several individuals share similar stories, they may even discover that others also have similar problems with water quality:

Question: Do you recall using stories or hearing stories from people about that?

Answer: Not really, oh yeah actually you're right. Women complain about how hard their water is. And when [I] do hair [at work], [I] can see the deposit of iron on peoples' hair. So ya, people having orange hair, and peoples' white clothing turning orange. Even yesterday at work people were complaining because the water is so hard [here].

(Interview 10)

This story about hard water appears to have been shared in a workplace with regular customers. The next quote provides a similar example in which some stories are shared featuring observations that only property owners would be in a position to make:

The value of their property was deteriorating so the older cabins weren't able to sell for what they paid for it in the first place, or what they thought it was worth when there was water there. So there was a lot of angst with many people. Loss of revenue and that type of thing. There was also concern over the salinity level of Jackfish Lake particularly because as the levels went down the salts concentrated. Salt levels went up and up and up. (Interview 19)

When gathering information to aid in SWPs, it may be important to listen to stories not only from different individuals but also from a variety of social circles. As the following extract reveals, listening to more than one social circle within a community may reveal a multitude of stories.

People living in the community, whether they're male or female or even youth, we've [worked with them] in terms of a photovoice project. We've heard their concerns around water and the implications [for] their health, and how they view water. So [I've heard from] several diverse groups within the community. (Interview 15)

Some ways of categorizing social circles are by age and sex. For example, men, women, and youth may have different perspectives on water. Sometimes several personal testimonies are needed to weave events together and see the bigger picture. The next quote illustrates that personal testimonies are sometimes necessary to communicate funding problems in SWP:

They were saying, this is an issue. The road to their lagoon was really mucky and muddy. The septic tank couldn't get out so it just discharged at the side of the road because it was stuck. It leaked down and that was a big deal, not good. That's bad and they were upset and wanted to do something about it. [But] INAC at the time said that you get X number of dollars for road maintenance. (Interview 4)

That quote was focusing on the experiences of a department with administrative responsibilities in the community. Personal voice can also be shared by an entire community, if they are speaking to someone from outside who does not share their local collective experience. Specifically, stories of hardship help others grasp the severity of a community's situation.

I guess a winter story, because I did work up north, in the Northwest Territories. Some of the Elders told me that they were having difficulty navigating for travel across the main river, the Slave River. They've had accidents where people have drowned or gone through the ice. (Interview 15)

This story illustrates the water challenges in a different environmental and/or cultural context. Listening to a person tell stories of water struggles specific to a region can provide a way to understand local water through their eyes without having to spend a lot of time there. In the next quote the participant spoke of visiting a northern community and listening to their stories for a better understanding of the area.

Even some communities in northern BC that I went to were not even feeling safe to eat the animals they hunt because of oil pipeline spills. You can see deer have been there. Or up north at Hatchet Lake, not knowing if you can eat your fish because of the uranium mining up there. Just that not knowing. I think the research would say it's probably fine, however people's perceptions about safe food and safe water is a very powerful thing. I think that's a stressor on people. Just that feeling [of uncertainty], and feeling that loss

because of that uncertainty. There's a sorrow at the loss of the past. So that's one of the stories that I've heard. (Interview 4)

That quote argued that perceptions of poor water quality influence behavior, regardless of whether the water is contaminated or not. For this reason, a story shared to *express personal voice* may need to be heard even when it fervently presents an argument without offering supporting evidence. The following quote by Participant 9 adds to this argument. It also contains a recalled story and provides a valuable example because of the definitive last statement.

He was talking generally about their well water, saying that since oil and gas drilling came into their area, the water has changed, people are sick. So that was really a strong message coming from an Elder. A well-spoken statesman sort of person having given the opening prayer in Cree, then... [a] very clear, concise description of how the water has changed and how people are now sick in the community where they never used to be sick before. Those sorts of stories are really powerful. (Interview 9)

The *express personal voice* function occurs when an individual shares a story from a point of view that is their own. This point of view may be shared by others in their situation such as a community or workplace, but it usually comes from someone who feels underrepresented or unheard and wishes to reach out. The stories used with this function theme appear to often revolve around someone's first-hand experience with overcoming or struggling with a water issue.

Inspire Sympathy: When source water is threatened it can compromise the future of families, communities, and culture. Any of these threats could elicit an emotional response. In their exploration of feminist political ecology and emotional geographies Sultana (2011) contends, "Emotions matter in resource struggles... [and] influence the outcome of practices and processes of resource access/use/control" (p. 164). A storyteller might elicit sympathy for an experience if they emphasize the personal impact it had, as in this example: "That was the force of this water. It's an amazing story. You should come look at this thing one day. You'd be shocked at what happened. One of our neighbors was really worried" (Interview 10). Participant 10 uses words that evoke emotion—"amazing," "shocked," and "worried"—to emphasize the personal impact of a water event. As the next quote illustrates, the impact of a story may be stronger if it relates to a listener's past experiences:

Sometimes the content is what stands out because the story is so compelling... He was telling us about when they were evacuated during a flood and how they were basically housed in a motel for a couple weeks. So the nursing staff had to come along with them and then the community didn't really have any health supporters in the community. So if something went wrong, they weren't there. That was kind of alarming to me, coming from a health background. (Interview 15)

The words “compelling” and “alarming” indicate that the participant sympathized with the community for their experience being evacuated and relocated. The next quote states that stories of hardship can cause a listener to feel empathy for the storyteller. I have included this reference to empathy under the *inspire sympathy* theme because empathy is not a ubiquitous ability, and although Participant 15 may be an empathetic person, it is safer to assume that those present would feel sympathy, at least.

So let's say there was a flooding incident and people were talking about... let's say they were in a First Nation community and people were talking about their flooding experience in that particular community. I think that there would be understanding generated and empathy given to the story and [who is telling it]. (Interview 15)

Like the last quote, the next shows that a story can resonate with the participant who heard it and elicit a sympathetic effect by saying things like “...that sort of story really hits hard.”

They spend a million dollars a year running water trucks... running water all over to these cisterns that nobody drinks. So they might run the water, they might wash with it, but I even hear of people getting rashes and stuff from it. So what the frig? Like why would you have a system like that? You're producing really good water, and the minute it leaves into the truck it's contaminated. So that sort of story really hits hard. You know because I think nobody likes to see waste, you know especially money... That's just one example, but yeah that hits hard. That I think is crazy. (Interview 9)

This participant is clearly outraged about the system of water delivery that this community was trying unsuccessfully to operate. Once someone reaches a point in the story where water is making people sick, an antagonist can emerge. In the next quote the antagonist is the oil and gas industry:

He was talking generally about their well water, saying that since oil and gas drilling came into their area, the water has changed, people are sick. So that was really a strong message coming from an Elder... There were no specifics, details or measured studies referred to or consulted. Just his very clear, concise description of how the water has changed and how people are now sick in the community where they never used to be sick before. Those sorts of stories are really powerful. (Interview 9)

The participant uses the words “really powerful” to describe stories of water quality decline, relaying sympathy for the Elder’s situation. In this quotation, the antagonist is the oil and gas industry. Sometimes, however, the antagonist of a story, like in the one below, may be harder to name or even nonexistent:

They mention that the environment needs to be healthy for their children and their children's children. So, that is something that is of great concern for the communities... then I guess a winter story, because I did work up north, in the Northwest Territories. Some of the Elders told me that they were having difficulty navigating for travel across the main river, the Slave River. They've had accidents where people have drowned or gone through the ice. (Interview 15)

Despite the lack of an antagonist, the recollection above elicits sympathy by emphasizing the loss and sorrow of a community. These quotes serve as evidence to support the idea that stories can appeal to our sympathetic nature.

Involve Others: Just because stories are framed positively in social science “does not mean that storytelling in planning, as it takes place all of the time (in boardrooms, in meetings of civil servants, in meetings of citizens, etc.) always contributes to an inclusive, community-focused planning practice” (van Hulst, 2012, p. 305). There is a type of storytelling that enhances involvement. It may be observed when a person is reaching out to another community about flooding, seeking assistance with a groundwater well, or finding ways to collaborate across a watershed. The following quotes indicate that stories can *involve others* in SWP. The first quote illustrates how experiences from conferences or meetings may be relayed to others in an effort to recruit them: “This is what I’m hearing out there. It’s something maybe you should take more interest in, and maybe [you should] go to some of these events as well.”

(Interview 2). The second quote demonstrates that stories can enhance participation in SWP by introducing each person and their connections to water:

I recall one committee member said, ‘why am I at this meeting? I know nothing about water’. But everybody knows something about water. Everybody has a connection to water. And perhaps if we had that general discussion first, shared stories, then that one participant would have found ways or would have thought about what she can do, whether as an individual or through her work. How she can better connect to water and realize that she does know something about water. And by sharing stories sometimes that’s how you realize your connection to the story being told. (Interview 3)

In this extract, the participant described an exchange of dialogue that establishes a role for each person in SWP. Next, Participant 4 points out that if the setting allows each person the opportunity to be both speaker and listener, indicating that this may be an important precursor when telling stories to involve others:

Even doing a round of introductions, making sure that everyone has a chance to say their name, who they are. And I always try to if I can, even just a little bit, and this ties into the story thing. Everyone will introduce themselves as the professional, but if you can request -and I love doing this- one little tidbit about your home community or something about you that’s personal, it says we’re not all competing professionally here. We’re all human and we are all agreeing to be on the same level... I find that that makes a huge difference in the engagement level, the willingness to participate certainly that comes with meetings. (Interview 4)

That quote suggests that giving everybody a space to share personal anecdotes encourages them to contribute to discussions later on. The next quote affirms the importance of including others:

There’s always a need to include others at the same table, hearing the same stories. And I realize that at times I do repeat myself. I know that some people join me at the table, who have been at the biggest table, oh [they’re] telling a story. (Interview 3)

Like the last quote, the next argues that continuing to share the same stories across different groups may foster cooperation among them:

I share stories with different groups. I sit on a number of different boards and all those people have heard my stories. And so in some ways those non-governmental organizations are now starting to work together and include [our First Nation] in the work that they find in common. (Interview 3)

For a story to involve people, they need to feel included in the discussion and to be receptive to the story, as the next quote illustrates: “I keep going to meetings trying to tell stories about the culvert mapping and things that we do that can help them. Again we, they, have to want to change.” (Interview 2). Here, participant 2 clearly indicated that people share stories at meetings in an attempt to gauge interest and solve problems in the future together. The next quote does not explicitly mention stories, but it supports the idea that telling a neighboring community about another's water issues can engage them in water planning:

We were trying to work with them because when [that Rural Municipality (RM)] release their waters, it comes to us and floods our system. And it keeps going [to] the [next] RM, and [the next]. It all flowed through there so they were flooded and hit by it. Everybody is affected so, how can we work together and try to help each other? Or, release a little bit, and when you do let us know so we're prepared. Then we let our neighbors down the road know [what's coming]. (Interview 7)

Whether it is sharing information that is important to both parties such as Participant 7 describes, spreading a common narrative of water across a network, or simply seeking to make someone feel valued at a meeting, sharing stories can help *involve others* in SWP.

Share Place-based Knowledge: Research has begun to explore the management potential of sharing place-based knowledge through story, such as the stewardship study by Silbernagel et al. (2015) that connected aquatic science with local knowledge shared through spatially-explicit stories, or ‘spatial narratives’. Work like theirs has revealed that critical knowledge about local human-environment interactions and hydrologic history may lie in the local experiences people share. Place-based knowledge is defined here as knowledge gained through experiencing and observing the environmental and hydrologic behavior of a place. One way to accomplish this has been explored by the concept of ‘place-based stories’, which weave deep historical and cultural meaning in a sacred way (Basso, 1996). However, the type of place-based knowledge discussed in this study is less sacred and more observational. Concepts similar

to this theme include traditional ecological knowledge (TEK) and local ecological knowledge (LEK). In the following quote, a participant speaks of using a local map to encourage people to share stories about water flow to then document that input in a report.

[Locals] looked at [the map] and thought, this is what happened, this year, in this area. And looking at the map and saying “no, the water doesn’t flow this way it flows that way. There were some alterations on the land that caused areas to flood because it was man-made in the past.” There’s a lot of that information that’s been documented, I think in a report. (Interview 2)

Similar to the map mentioned above, presenting locals with water quality information may help them to recall features of the landscape and share stories that enhance a SWP plan.

Sometimes it’s just [from] educating people that you know. That’s a potential source of contamination to an aquifer, a place where leachate can be getting in. And then they’ll be like oh! It triggers all these memories and knowledge that people have of the landscape. (Interview 4)

That key role of place-based knowledge is further emphasized in the next quote. This knowledge may be accumulated over time and/or from practical experience.

Their traditional knowledge and their experiences of the landscape. They’ll say oh well let’s include that in the plan now because we know that there’s a stockpile of batteries over there or, this is the drinking grounds and people party [there] and it’s right by the lake on sandy soil so we don’t want it [contaminated] or, there’s all these random vehicles over here. (Interview 4)

It is put forward here by Participant 4 that including traditional knowledge in the SWP plan can reduce the potential contamination of source waters. Furthermore, as this exchange with Participant 9 reveals, knowledge via storytelling can provide a rich historical record and context for future work in the area:

Researcher: Why do you think [storytelling] is important?

Participant: Well it gives context right? It gives the context of the problem. You look here and you just go, new landfill or septic shootouts, or chief island well so it’s

important too, you know for context? But somehow 10 years from now when [the community] is looking at this plan -like it makes sense to me and the people that were there, but ten years from now it's a whole different committee. (Interview 9)

In that example, describing the local context through storytelling helped the committee identify locally recognized sites of potential contamination. Participant 9 also mentioned that the composition of SWP committees change. The next quote argues that if someone trying to solve water problems in the future is unfamiliar with the area, they should consult locals who are and listen to their knowledge of past events:

That's how we thought about it. Who knows better than people who have lived through it? Lived through some of those events to get that local knowledge. Because how do you ground-truth once you have a plan and say, this is what we think is going to happen but they say no, that's totally wrong? (Interview 2)

As the next quote illustrates, if life experience provides people with stories to tell, it follows that the older someone is, the more contextual knowledge they have to share through those stories:

Peoples' grandparents, or their parents or somebody else even older are telling stories about what happened in the past and I think people are starting to take notice of that. We have to listen to, some of that old knowledge that we think is ridiculous at times. (Interview 2)

With those words Participant 2 specifically highlights that listening to storytelling from Elders provides valuable historical information about the local area. Looking to Elders for knowledge is also supported by Participant 9's earlier statement about collecting knowledge now to benefit future generations. In the next quote Participant 3 supports the idea that storytelling can preserve knowledge for communities.

Some people do see the actions we took, but I think there's a need to share those stories within the community as well. Because community members don't realize the work that was done. At times they don't realize the power of our network, the power of our partnerships. And so I think there's need for storytelling within the community as well. For people to be reminded or be informed. (Interview 3)

In that quote Participant 3 emphasizes storytelling to share knowledge about a community, or place, with that same community. They add to this idea by describing types of local knowledge to share.

I think by understanding or learning that history perhaps we can find ways to better connect with land, with place, and have a greater appreciation about what we might be doing to that place for future generations (Interview 3).

Thus far it has been argued that stories can share place-based knowledge across generations. As Participant 6 indicates next sometimes stories from past generations can hold specific details about the way water used to be managed.

I used to laugh and they'd talk Cree and -it sounded more funny when they talked Cree- but I could just picture them trying to run out [of the water]. But yeah [dad] kept the water [clear]. There's beaver dams all along this creek and if it's not kept open we're going to have problems. That creek comes right through here. We're having problems at the at the clinic because of the creek is right there. (Interview 6)

The father mentioned in that quote used stories to share his knowledge of the area's drainage system. In the next quote Participant 6 makes the point that some recollections of stories may contain less detail because they are associated with a more generalized understanding of water in an area.

From long ago, just thinking of my dad telling us stories like that. That you, we have to protect the water. You have to have good drinking water and if everybody did that, if everybody thought like that across the land, we'd all have good water. But I don't know if they think of the future. (Interview 6)

In that quote we are given another example of sharing place-based knowledge through story with the next generation, father to child/children. Historical knowledge from the long-term inhabitants of a landscape is sometimes referred to as traditional knowledge. The next quote refers to stories that contain this information as "traditional stories":

Researcher: What kind of stories do you think should be shared more?

Participant: Well for sure the traditional stories, and the stories of the past. Of how people used water before, maybe not so far back. Well that's important as well, but even the stories of recently, like my grandparents and how they had such a hard time collecting water or getting clean water. Or going to wash their clothes or different things that today people take for granted. And if a lot of people understood how hard they had to work to get water then maybe they would appreciate it more. (Interview 8)

Next, Participant 4 labels stories from the past as "second-generation stories", and points out that those types of storytelling must be considered part of a bigger picture because memory can be a biased source of information:

This is how it used to be, wonderful back then. And we don't have that anymore, you know. However, before the dams there were flood events that I'm sure brought disastrous impacts onto the community and probably health impacts, and ruined people's homes and what-not. Like, floods can be a serious thing. They are a serious thing, you know. So I think when we have those, I'll call them second-hand or second-generation stories, you miss that full perspective of the good and the bad. And you narrow down to one aspect of [history]. So it's not a totally true story. Not a true representation. (Interview 4)

This excerpt explains that information is shared through stories but that these stories come from memories of a place. "Second generation stories" tell of the way an experience impacted someone and may exclude other important details, so they are valuable but are not complete records.

Single stories may not be enough. As van Hulst (2012) argues in their discussion of stories in and for planning, since stories are subjective, "critical researchers, administrators, politicians, planners and citizens involved in planning, [should] always ask for more than a single story." (p.313). Still, it is clear that stories can *share place-based knowledge* and contribute to SWP planning in ways such as adding contextual detail, identifying problem sites, remembering historical events, and recalling experiences of water in some place.

Co-construct a Narrative: An engaging storyteller can help their audience observe their own personal experiences reflected in a plot. In the words of Ricketts and Seiling (2003) on catalysts in organizations, an engaging storyteller causes "... their audience to co-construct the

story, and in doing so they bring multiple interpretations to life within the context of one tale” (p. 39). The following quotes address the need to act as both listener and a speaker, to share stories of a place in succession, and contribute to the dialogue of the group:

Sometimes it’s just educating people that you know. That’s a potential source of contamination to an aquifer, a place where leachate could be getting in. And then they’ll be like oh, and it triggers all these memories and knowledge that people have of the landscape. (Interview 4).

In the above quote the participant has described a chain effect in which one person's sharing of a memory causes others to do the same. As depicted in the next quote, several layers of memories may evolve to form one narrative:

It would be, you know a family member, or this happened to my neighbor, which created that evolving story that someone else would give some input and they would continue with. (Interview 1).

The phrase "that evolving story" from Participant 1 was the first that suggested the theme *co-construct a narrative*. Participant 1 went on to expand their idea of evolving stories later in the interview:

Then another person within the working committee would comment on the same situation and be like yeah, the same things happened to me, and a conversation would happen. So rarely was it ever me asking a question. I would put forth a concept or small blanket statement and then it would just kind of evolve and build from there. And that’s how we gathered some important, tangible knowledge and information. (Interview 1)

Like Participant 1, Participant 15 also indicated that group settings facilitates sharing, adding that the presence of Elders can play a significant role in co-constructing a narrative.

So, I think it would depend on who you're talking with, and then whether or not you're in a group or alone. Because some people will share some things differently when you're by yourself, or within a group. I found that when we have an Elders group, in a sharing circle someone will share a story and then that information, or the information around that story will build. So more information about that story comes out and it will trigger

people's memory. So I guess in relation to people sharing their information, sometimes it is good to have a sharing circle or whatever you want to call it, focus group, to spark people's memory about the story. Then the story sort of starts as a central node but it expands wider, like a ripple of water. (Interview 15)

The ripple effect described in this last quote is similar to the chain effect of story sharing mentioned earlier. One might witness people *co-construct a narrative* during SWP if they share stories in succession, adding to the memories and water knowledge of those who spoke before them. When community members hear one other share life experiences, a narrative is formed that is derived from the lived experiences of the group.

Establish Local Water Value and Priorities: Sharing and listening to stories can reveal important things about the way locals perceive their water. “When we talk of a place, or a story of a place, then that story, to some extent, is a story we share about ourselves and how we understand the world.” (Gearey, 2018, pp. 134). The following quotes illustrate how recounting experiences can communicate the value someone places on water, and how they prioritize it. To set the stage for this theme, I begin with a quote from Participant 4 who draws a direct connection between storytelling and perception:

I think storytelling is valuable because, as I've facilitated source water protection plans so far, it's perceived threats. But when you talk about water because of people's perspectives and how they connect themselves to a certain risk or to a certain source, those connections and those stories are an important way of opening up into what other risks might be. (Interview 4)

Participant 4 explains that through their experiences facilitating SWP, storytelling not only communicates perceived threats, it opens up the dialogue to the values of those present. The next quote frames stories as opportunities to listen.

So sharing stories around water... what's the function? I actually think that sharing a story gives people an opportunity to hear what happened to that individual, or even what the meaning of water is to them sort of thing. It's an opportunity to actually listen and hear from somebody else's perspective. (Interview 15)

Like the last, the next quote argues that sharing personal experiences may not only reveal what water means to an individual (value) but add to others' understanding of water as well.

I think people come into a group and they have their own personal perspective and they have their own personal experiences. By sharing those people can listen and broaden their understanding of the lake, or the watershed. I'm not sure what works and what doesn't work... but I think the more you communicate between each other the more, the better people's understanding of the watershed is going to be. (Interview 16)

Next, Participant 15 explains that what qualifies as a water issue can vary between or even within communities. They identify a need to hear from everybody, something that other participants say storytelling can facilitate.

In terms of the community, every community is different. And not just at the community level but even the individuals within the community, they have their own perspectives. Their own ideas and perceptions around issues in their community. And it's important to get a holistic understanding of what a water challenge is, or even a solution is. Especially if resources are put towards looking at that issue, or developing solutions for an issue, it's important to hear everybody. (Interview 15)

By focusing on a “holistic understanding” Participant 15 brings up the importance of hearing several perspectives to form a bigger picture of water. Participant 4 mentions next that storytelling can supplement the big picture by explaining how people perceive and connect to water.

We just have some community members, people from the community who have stories to share that are not necessarily focused on the business of the risk assessments. They would share more of what they perceive and connect to water, which would be more stories. (Interview 4)

The connection to water that Participant 4 spoke of can reveal different values for water, be it physical, cultural, or spiritual, as Participant 15 explains below.

I remember hearing several times from different community members across Saskatchewan that their concern with water contamination is affecting their traditional

practices and utilization of the water sources within their communities. Not only for physical health, but for cultural and spiritual ceremonies. (Interview 15)

In that quote Participant 15 mentioned that water is not only valuable for health but also traditional practices. Next a participant illustrates that storytelling can help prioritize local sources of water in a way that tailor the SWP plan to their values.

I think storytelling is really valuable for setting a foundation of understanding and values. Sometimes I can tell right away that a community is more concerned about their wetlands than their aquifer. That's something more valuable to them for wildlife. So I will say, look, for my own initiative I'll include the aquifer to identify risks there. But I made a concession to include discussion and action items that will improve water in the wetland or the creek. Because that's clearly important to them and that's how they view water. Even though that's not their drinking water. (Interview 4)

In the above extract, Participant 4 also explains how local water priorities shape a SWP plan and how those priorities can be naturally gleaned by listening to community members' stories. Participant 4 went on to explain that storytelling can convey water value on deep level of understanding, and that understanding depends on who the audience is.

When you speak of water this way, and share in that storytelling you kind of shift audiences. I've shifted audiences and I've come to know water in a different way that's really difficult to explain to people. And now I've found when I am in a different group or audience that I've brought my abstract self into their discussion of water in ways we don't agree with, or aren't common. Talking about water as a spirit, when the intention and the normalcy of this audience is to talk about water as a resource, not a being. I remember coming out of that meeting like, oh whoops, I went to far. You almost have to bring yourself between worlds. There's certainly two worlds of thinking. (Interview 4)

The above-mentioned "two worlds of thinking" about water illustrates why stories that establish values and priorities are useful in SWP. If people are divided on the very concept of water they might misinterpret one another during the planning process, compromising its success. The following quotes support the argument that local water discourse influences the success of a SWP plan.

In the planning process we discuss perceived threats to water. We're not doing any data collection. So we talk about it - oh this might be a risk. It's perceived threats. Therefore what I've discovered is that the composition and diversity of the steering committee has a tremendous influence over the outcome at the end of the day. So if you simply engage a few council members your plan is going to look like, 'this'. If you engage them and perhaps some officers with Health Canada or Water Security Agency or someone with different technical knowledge and experience it has a tremendous impact on what perceived risks are, and also what can be done about them, at the end of the day.

(Interview 4)

If, as participants suggested, the success of a SWP plan hinges on the perceptions expressed, and stories help express perceptions, it follows that storytelling can play an integral part in successful SWP planning. Storytelling can *establish local water value and priorities* by facilitating an exchange of perceived threats to water in group settings. Sharing that there are different ways to view and use water makes storytelling a useful tool for developing a SWP plan because it accounts for local behavior and is tailored to the needs of the community.

Build Relationships: Planning with communities requires that trust be developed among those involved. In their book on communicating with story, Gargiulo (2006) contends, "True communication works at building and sustaining relationships," and "stories connect us to others—they serve as bridges between our experiences and the experiences of others" (p. 4). The importance of establishing positive working relationships during the SWP was a recurring theme when participants were discussing stories. One way that stories build relationships is by serving as an icebreaker when individuals first meet, as is illustrated by this first quote.

Researcher: How would someone tell these stories? When would it come up?

Participant: Usually in the first two or three meetings. We just talk generally. Like in the first meeting we introduce ourselves and we just talk about the community as a whole reserve, about the water to gain a perspective on what's going on. (Interview 4)

Participant 4 associated stories with the early stages of planning. This same participant went on to explain that setting can help facilitate dialogue that builds relationships, that there is a "core human connection" when people tell others about themselves at a meal.

The best is when we have a meal first, and I really stress that. There's something very powerful and core to human connection when you break bread together and you eat together or share personal information with each other. It breaks down these barriers. I started with, when you asked me to tell you about myself, is it professional or personal, how we present ourselves to people. So you can break down some of that barrier. You're more able to present an honest, well-rounded representation of who you are. (Interview 4)

Although storytelling was not explicitly mentioned in that quote, the circumstances Participant 4 described sound like an introduction, which they argued in the quote before is where stories occur. Similarly, Participant 3 explains that if someone shares their story in the early stages of SWP it may draw others into conversations about water.

That is [a] value of storytelling as well, that those who are listening usually find ways to connect with the story you're telling. What do they have in common? I think that's a good [method] of finding ways to start to work together, realizing that we often do have a lot in common but we just think about our differences. (Interview 3)

Thus, sharing a story can help others understand ways to work with the storyteller. Like the last quote, the next supports the idea that stories help people see past differences and bridge, or repair, relationships.

I think when people share their experience and their stories with honesty and openness in a way that doesn't present a sort of tone that is finger pointing or aggressive, or even a gesture in terms of mannerisms, I think stories and experiences can go a long way in terms of bridging relationships. (Interview 15)

The term "bridging" was used several times in the interviews when the participants were discussing working relationships, implying that people working in SWP may not always be acquainted, or even on friendly terms. As the following extract suggests, finding common ground through stories can have important connotations for social and political relationships.

Certain terms are in the back of everyone's mind. One is reconciliation. Whether it's government, non-government, different groups, the press, the media, there's a lot of talk of reconciliation. But different people, different groups at times they puzzle, what is reconciliation about? I think [our] actions, our partnerships and alliances, that's

reconciliation. By demonstrating how sharing has benefitted say all of our communities, then people see that they can take individual actions or group actions. Simply sitting down with people and sharing stories I think, finding common ground. (Interview 3)

When this participant brought up reconciliation, they were referring to a current social movement in Canada in which settler Canadians and Indigenous Peoples develop and build relationships while recognizing that Indigenous Peoples have been treated unjustly (TRC, 2015). Reconciliation through storytelling was described in the planning literature even before the Truth and Reconciliation Committee revealed its calls to action. As van Hulst (2012) argued eight years ago, “Telling stories and listening to them might be a way to (slowly) reach mutual recognition or reconciliation of deep conflict, or a way to recover from trauma” (p. 303). The next extract demonstrates that even sharing and listening to stories which seem unrelated to SWP builds rapport among those present.

Even [when it’s not about] their drinking water. I think stories that come up in the middle of a meeting, sometimes those are the best stories. That’s finally where the bridge has been made, where they feel comfortable enough, so it doesn’t always happen at the beginning. So I think there should be room for that... sometimes there’s been stories that have been way off [topic], and then there’s a long pause. We’re like okay, thanks, back to this, awkward but whatever. (Interview 4)

Thus, as Participant 4 suggests, comfort level and storytelling in a group are strongly correlated. Because SWP requires that people with different backgrounds work together, it is important to find ways to introduce people, establish common goals, respect others’ experiences, and set the stage for cooperation. The above quotations suggest that sharing stories, particularly early in the SWP process, is an effective way to *build relationships*.

Guide: Stories developed collaboratively have been known to provide guidance. As Goldstein et al. (2015) argue in their pursuit for resilience in urban systems, “collaborative planning stories are both descriptive and normative, making sense of the world while providing guidance for change amidst turbulence and uncertainty” (p. 1297). In the quotes below, individuals speak of using stories in the pursuit of advice or knowledge. First, Participant 13 recalls providing advice when supervising several SWP plans. During their time as a supervisor

Participant 13 counselled planners about the events and experiences of SWP stakeholder meetings.

Everything that went into these [SWP plans] was achieved by consensus, not by majority. And so that was the real trial. So yes, particularly a couple of the planners that I really got close to who sought my council or coaching and support were, they went through that lots. They'd take conversations down to you know personality conflicts or the details of arguments or disagreements they had with their stakeholders. (Interview 13).

According to that participant, planners used stories to explain and seek advice about interacting with specific stakeholders in SWP. Participant 8 takes a more holistic perspective when guiding others with stories.

I think that sharing stories is integral to appreciating and respecting water now more than ever. Because now with climate change and all these other factors that are influencing the environment, the lands, the waters, you need to have that appreciation so that you can protect it and take care of it. (Interview 8)

The above quotes attest to recent uses of storytelling, but in the next quote, the participant points out that many stories with guidance potential have been lost through cultural trauma.

So because the stories and some of the knowledge that we had in regard to our culture have been lost, or forgotten. Maybe they weren't even taught to our people because of a lot of influences such as residential school and colonialism. All the different things that affected the lives of our people, caused them to lose a lot of the teachings and appreciation for the culture. (Interview 8).

Had the stories Participant 8 speaks of not been lost, they may have been rich sources of Indigenous knowledge for community planning. The broad implications of water quality issues introduce complex problems. The quotes above suggest that when people are working to solve these problems, preparing for them, or remembering what was done before, stories are an important source of *guidance*.

1.12.3 Summary on Function Themes

According to the participants of this research, storytelling can perform several different functions during SWP, each appearing to connect people with other people, to water, or both. In Chapters One and Two I established that storytelling has been explored in other areas of research for many different uses. This versatility of storytelling is supported by finding 11 different themes of storytelling function. Some of these storytelling functions may or may not be exclusive to SWP, so more should be explored about the social interactions behind drinking water solutions. As much as I wish I could explore the scholarly implications of each theme, my analysis was designed to center on which theme is most commonly supported in the memories of actual storytelling.

This is where I turn to the other two Faucets of my framework, moving toward the meaning beneath participants' words and on from thematic analysis, which has been described as "leaving the garden path" (Bazeley, 2009, p. 9). Now that I have established a list of possible storytelling functions, the first layer of the Three Faucet Framework, I will show the reader which functions were more commonly supported by the storytelling events (stories) participants recalled.

1.13 Recollections

In this section I explore what participants have recalled storytelling has done, the second layer of the Three Faucet Framework. I begin this part of the chapter with the formality of storytelling settings, moving onto how the function themes aligned with the stories and which theme was most popular. The results from the third Faucet of the Three Faucet Framework is covered in the following section, Values.

When unpacking the function themes it was clear that the setting influences storytelling. An example of setting's influence was demonstrated throughout the theme *build relationships*, which mostly referred to settings such as first encounters and introductions. As was mentioned in Chapter Two, informal settings play a role in storytelling just as professional settings do, and since the stories were sorted by setting before they were assigned functions, that is what this section on Recollections begins with.

1.13.1 Settings from which Storytelling was Recalled

Stories that participants recalled from performing professional SWP duties such as meetings, fieldwork, or community engagement were sorted as professional. Stories recalled from informal settings may have been told during casual activities that surround SWP such as sharing a meal, a smoke break, or in the households of locals who contributed to SWP.

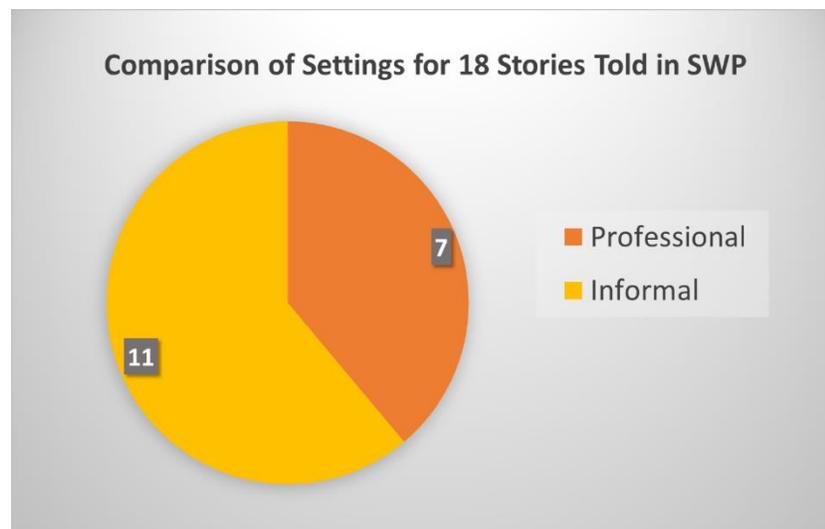


Figure 3.3 Settings that storytelling was recalled from for 18 stories.

Out of the 18 stories that made it through the filtering processes of the Three Faucet Framework, seven stories were recalled from professional settings, 11 stories from informal settings. These numbers were unexpected. The interviews revolved around a planning process that is arguably full of professional interactions, but according to participants' memories, the storytelling that occurs in informal settings was just as important to discuss in this study, if not more, than those from professional settings. Without a more structured interview process it is impossible to say whether storytelling in informal settings is more important, more memorable, or occurs more frequently than those from professional settings. Either way, informal settings contribute significantly to storytelling during SWP.

To delve further into this finding Figure 3.3 shows the 18 stories contributed by each participant according to the setting they recalled it from. Most participants contributed at least one story while others contributed many, or none that fit the criteria I established.

Stories contributed to final analysis	Participant Alias															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
P2		X														
P9.1									X							
P9.2									X							
Professional settings P9.3									X							
P9.4									X							
P16.1																X
P16.2																X
I2		X														
I4				X												
I6.1						X										
I6.2						X										
I8								X								
Informal settings I10.1										X						
I10.2										X						
I14													X			
I15.1														X		
I15.2														X		
I15.3														X		
Total		2		1		2		1	4	2			1	3	2	

Figure 3.4 Number of story contributions to the final analysis by participant and setting.

The findings in Figure 3.4 were compiled to display two findings. First, it supports the finding that informal settings are significant to storytelling, because a greater number of participants recalled their stories from informal settings (seven) than those who recalled their stories from professional settings (three). Second, observe that participants recalled their stories from either professional or informal settings but not both (with the exception of one participant). There were too many unknown variables to speculate why participants tended to recall stories from one setting or another. However, what can be concluded is that to ignore storytelling from one of those two settings would cause a considerable loss of insight.

The Three Faucet Framework did not target storytelling setting as a key factor, but it is a researcher’s responsibility to remain responsive to the data. In summary, informal settings play an important part in the storytelling of SWP, and allowances should be made for storytelling in both professional and informal settings if every voice is to be heard. This finding has important implications for clumsy solutions and is expanded upon in the discussion of this thesis.

1.13.2 Stories with assigned Themes of Storytelling Function

In total, 18 stories were selected from the 16 interviews and examined in detail. Most stories supported multiple functions, demonstrating that stories can do more than one thing at a time. On average nearly four functions were assigned to each story, resulting in a total of 65 assigned function themes.



Figure 3.5 Frequency of function themes identified across 18 stories recalled from interactions around SWP.

As shown in Figure 3.5, the two most frequently assigned function themes were *share place-based knowledge* (15/65) and *inspire sympathy* (10/65). Four functions tied for the third most frequent (6/65): *Identify threats to water*, *express personal voice*, *guide*, and *provide relatability*. The other function themes aligned with five stories or less. The *share place-based knowledge* theme was also one of the themes most discussed by participants (reference Figure 3.2).

Most Common Function Theme Overall: *Share place-based knowledge* was clearly the most common function theme across the stories, aligning with 15 out of 18. As was explained in Chapter Two, I chose to focus on the most common function theme because if a function theme aligns with multiple stories, then it is the most likely theme to occur during SWP.

Discovering that *share place-based knowledge* was the most popular theme is consistent with discussions in storytelling literature of Table 2.3 selected from Journals of Ecology and Society, Planning Theory, Environmental Evidence, and Sustainable Development. The sources from those journals provided four purpose codes that referred directly to sharing knowledge or information: to share indigenous historical knowledge; to inform; to share knowledge in planning; and to share LEK.

Place-based knowledge could be considered the missing piece of the ‘water puzzle’. Not only is it now being integrated directly into water planning in Australia (Douglas et al., (2019), but also more technical work such as river system geomorphology (Brierley et al., 2013) and limnology (Penny et al., 2016). In addition to sharing place-based knowledge through stories, recall from Chapter One that humans not only write stories from our knowledge of nature, we use these stories to understand and manage our natural environments (Cronon, 1992; Fernández-Llamazares & Cabeza, 2016).

By finding the *share place-based knowledge* theme in the initial thematic analysis, observing it to be the most common in participants’ memories of stories, and finding it reflected in various literary sources on water decisions, I argue that storytelling which *shares place-based knowledge* is a wide-spread component of drinking water decisions.

1.14 Value

Now that storytelling themes, settings, and most popular function have been determined using the first and second Faucets of the Three Faucet Framework, it is time to examine the results of the third Faucet: Value. The value I was determining was if storytelling has good or poor potential to encourage clumsy solutions in SWP. However, before proceeding with the results of the third Faucet, I will ask the reader to recall a particular function theme from Section 3.1 that echoes the exchange of perspectives required for clumsy solutions.

To *co-construct a narrative* is to use a story to entice others to also share stories in succession by triggering their memories. Recall how Participant 15 spoke of a ripple effect, “it is good to have a sharing circle or... focus group, to spark people's memory about the story. [The story] starts as a central node but it expands wider, like a ripple of water.” If the ripple effect the participant referred to occurred among diverse minds, it would encourage conflicting viewpoints to emerge and ultimately provide a more complete understanding of the topic. Such a social exchange is consistent with the process of finding clumsy solutions, termed ‘clumsiness’ by

Thompson (2011). With the link between *co-construct a narrative* and clumsy solutions drawn, I will move on with the rest of the Three Faucet Framework.

The rest of the analysis was accomplished by matching one of cultural theory's five rationalities to each story in the data and counting how many different rationalities emerged. The more rationalities observed, the more likely it is that storytelling supports clumsy solutions in SWP. The possible rationalities were hierarchy, individualism, egalitarianism, fatalism, or autonomy. A process for matching each story with a rationality was developed to suit the context of this study and minimize bias (see Chapter Two).

1.14.1 Rationalities Matched with Stories

Three out of the five possible rationalities were matched with participants' stories. The following two rationalities matched most frequently: hierarchy (8/18) and egalitarianism (7/18). A few stories matched with the individualistic rationality (3/18). The proportions of each rationality among the stories are featured in Figure 3.5. No stories were found to match with fatalistic or autonomous rationalities.

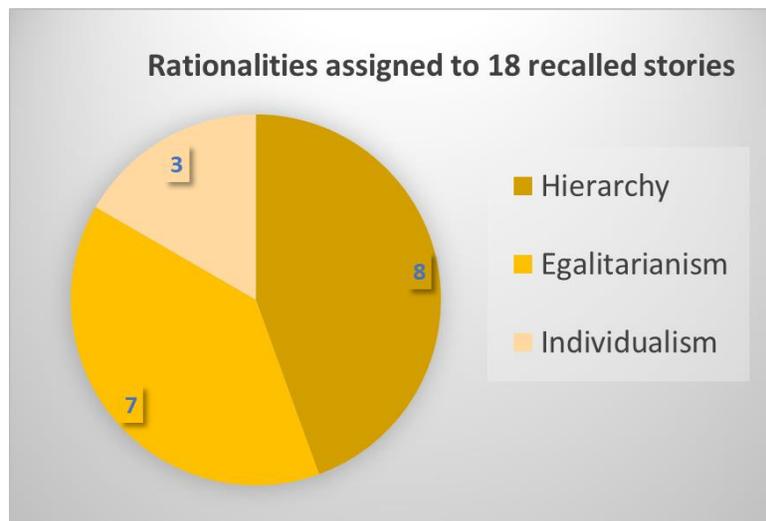


Figure 3.6 *The rationalities matched with 18 stories recalled from interactions around SWP.*

In Chapter Two, we saw that the hierarchical rationality tends to focus on the expectations and timeline of authority, such as the regulation of water. The egalitarian rationality focuses on fairness, such as the need to share water. The individualistic rationality focuses on the immediate benefit to oneself, such as waters on personal property. To oversimplify, stories' participants focused on water regulations or shared waters, with a few on self interest. Observing

three rationalities was promising, but not as good as all five. I then asked, were fatalism and autonomy really missing from storytelling in SWP?

Autonomy and fatalism did not match any stories, but they appeared in the dialogue that revolved around storytelling in the interviews. The following quotation, selected from Section 3.1, aligns with an autonomous rationality. The participant speaks from an objective position, expressing no connection to any group in particular. They end their account of events by generally observing that stories connect people, a neutral statement that could apply to anyone.

If we had that general discussion first, shared stories, then that one participant would have found ways or would have thought about what she can do, whether as an individual or through her work; how she can better connect to water and realize that she does know something about water. By sharing stories sometimes you realize your connection to the story being told. (Interview 3)

Shown next is a quote that aligns with a fatalistic rationality. The participant describes how a community's money and resources are spent on a doomed water trucking and cistern system. In their description, the clean water will end up contaminated anyways, even with considerable funding being put toward a solution.

They spend a million dollars a year running water trucks... running water all over to these cisterns that nobody drinks. So, they might run the water, they might wash with it, but I even hear of people getting rashes and stuff from it. So what the frig? Like why would you have a system like that? You're producing really good water, and the minute it leaves into the truck it's contaminated.

Cultural theory states that clumsy solutions require that we account for the entire picture (Thompson, 2011), so observing all five rationalities among participants' stories would have been ideal. However, autonomy and fatalism are present, not in the stories themselves but in the dialogue of the interviews. It appears that some rationalities took the foreground, conveyed directly through stories while others are situated in the dialogue around storytelling. Matching three rationalities with the stories, finding the other two in the surrounding dialogue, and considering that the function theme *co-construct a narrative* directly speaks to collaboration. In other words, there is enough evidence to suggest that storytelling has good potential to encourage clumsy solutions in SWP.

1.15 Chapter Three Summary

The Three Faucet Framework was used to analyze the 16 interviews for themes, recollections, and value of storytelling in SWP. In total, 11 themes of storytelling function were identified and unpacked at length using participants' words. Next, from the recollections I found that informal settings play an important part in the storytelling of SWP, and that multiple function themes matched with participants' stories. The most popular function theme among the stories was found to be *share place-based knowledge*, which is gained through experiencing and observing the environmental and hydrologic behavior of a place. Lastly it was concluded that storytelling offers value to SWP because it has good potential to encourage clumsy solutions.

CHAPTER FOUR: DISCUSSION AND CONCLUSION

In an integrative approach to narrative research, this thesis has explored possible functions of storytelling in source water protection (SWP) and the various rationalities involved. The analytical framework developed for storytelling function, termed the Three Faucet Framework, produced multiple themes of storytelling function from the interview transcript. The stories that participants recalled from SWP often shared place-based knowledge and matched with three different rationalities, most often hierarchical and egalitarian. In addition, more stories were recalled from informal settings than from professional settings and from a greater number of participants. Findings about storytelling setting indicated that informal settings play an important part in the storytelling of SWP. This chapter comprises the discussion and conclusion of this thesis. The discussion covers the development of the Three Faucet Framework, informal settings, functions of storytelling in SWP, the potential for storytelling to encourage clumsy solutions, and study limitations.

1.16 The Three Faucet Framework

The Three Faucet Framework I designed for the analysis takes sensitivities of context into account. To tailor the analysis for this study's context, I relied on insights of several foundational concepts to satisfy the unique scope of storytelling in SWP on which no previous scholarship could be found. The framework could potentially be applied in other decision-making environments where water quality is the concern. The foundation for the framework used to assess each story was inspired by a medical decision-making taxonomy (Shaffer & Zikmund-Fisher, 2013). The assigning of functions incorporated a list of contexts offered by Pahl-Wostl et al. (2007) to facilitate social learning in water management. Storytelling purposes were parsed from the literature, leaning particularly on others' work with communicating environmental evidence (Sundin et al., 2018), enhancing human rights education (Chin & Rudelius-Palmer, 2010), and furthering sustainable development through water stories (Gearey, 2018).

The definition and potential of storytelling I used as it is applied in a planning setting was adopted from a helpful summative paper on the theory of storytelling as a model of and a model for planning by van Hulst (2012).

Given the sources used in development of the Three Faucet Framework, researchers interested in storytelling for the purposes of health decision-making, water management, or water planning would have the easiest time adapting the framework to fit their needs. Researchers exploring in either of those directions may apply the framework in their work with few adjustments, but in adapting it they should keep in mind that the elements of its design were chosen to match the geographic and cultural characteristics of this study's scope. Because of its tailored nature, any application of the Three Faucet Framework should be considered a derivative of the original, to accommodate the scope it is applied to. When applying the Three Faucet Framework toward Indigenous water research, it is imperative that conversational storytelling be differentiated from mythical, personal, and sacred stories. Indigenous mythical, personal, and sacred stories are unique in quality and ownership to their keepers (Iseke, 2013), therefore these types of stories need to be analysed separately from the storytelling of natural conversation, and with explicit guidance and permission of their keepers.

In an era where qualitative research appears to be rapidly developing, I wanted to create a tool for those seeking nuanced qualitative techniques. The Three Faucet Framework was designed to perform more than thematic analysis. Thematic analysis is a valuable tool in qualitative research, but like Bazeley (2009), I argue that it is only a sliver of the qualitative dataset's whole potential. Interpreting a qualitative data set from multiple angles more thoroughly explores participant input and may even make it more transferrable by appealing to a variety of audiences. In their 2013 book, *Qualitative Data Analysis: Practical Strategies*, Bazeley dedicated an entire chapter to moving beyond codes and themes, to “describe, compare, and relate” qualitative data (p. 223). Bazeley's “describe, compare, and relate” strategy complements the three parts of the Three Faucet Framework. The first Faucet of the Three Faucet Framework centered around thematic analysis to then *describe* each theme at length. The second Faucet of the framework *compared* participant recollections of storytelling to the themes of the first Faucet. Then, the third Faucet *related* participant recollections of storytelling to principles of cultural theory. This ‘triple-threat’ nature of the framework allows it to interpret greater insight from participants' words, examining their stories in greater detail and allowing more opportunity to

learn from them. Although the analytical framework developed in this thesis is a large part of its contributions to academia, I now move on to discuss the findings it produced.

1.17 Functions of Storytelling

From the first Faucet of the analysis (Themes), 11 themes of storytelling function were identified from the interview transcripts. Each function theme was a product of observing similar ideas across the interviews. As each theme evolved through separate yet similar ideas of multiple participants, each theme was likely significant to SWP in some way. The significance of every function theme, however, is not the focus of this discussion as the themes were elaborated on at length in Section 3.1.2 of Chapter Three using supporting quotations. The discussion here is directed toward the most popular theme among participants' recalled stories. Next, the second Faucet showed that several different function themes could be assigned to each story, suggesting that stories have a broad range of applications. Before revealing the most popular function theme across the stories, the second Faucet also revealed storytelling setting as a key factor, and so I discuss storytelling setting first.

1.17.1 Storytelling from a Variety of Settings

A lack of professional expectations and structure emerged as a key ingredient in storytelling in this study. Most participants' stories were recalled from settings where those engaged were not fulfilling professional obligations; rather, they were sharing a meal or a smoke break. Although the exact circumstances facilitating the stories cannot be confirmed, many story function themes featured elements of personal and even emotional connection, e.g., the themes *inspire sympathy*, *build relationships*, and *provide relatability*. Casual encounters such as those described by the participants often involve friends, fellow community members, or individuals with whom a point of emotional connection is already established (Kim & Ball-Rokeech, 2006; Little & Froggett, 2009; Chin & Rudelius-Palmer, 2010).

Intrigued by finding that participants recalled so many informal stories, I compared the settings of participants' stories with their assigned function themes and rationalities (Figure 4.1). Stories recalled from professional settings were assigned fewer function themes overall, regardless of rationality. Put another way, stories recalled from informal settings were capable of doing more at once than those from professional settings, regardless of the viewpoint being

communicated. The significance here is that storytelling in informal settings appears to do more despite needing less preparation, therefore offering more flexibility and versatility at lower cost.

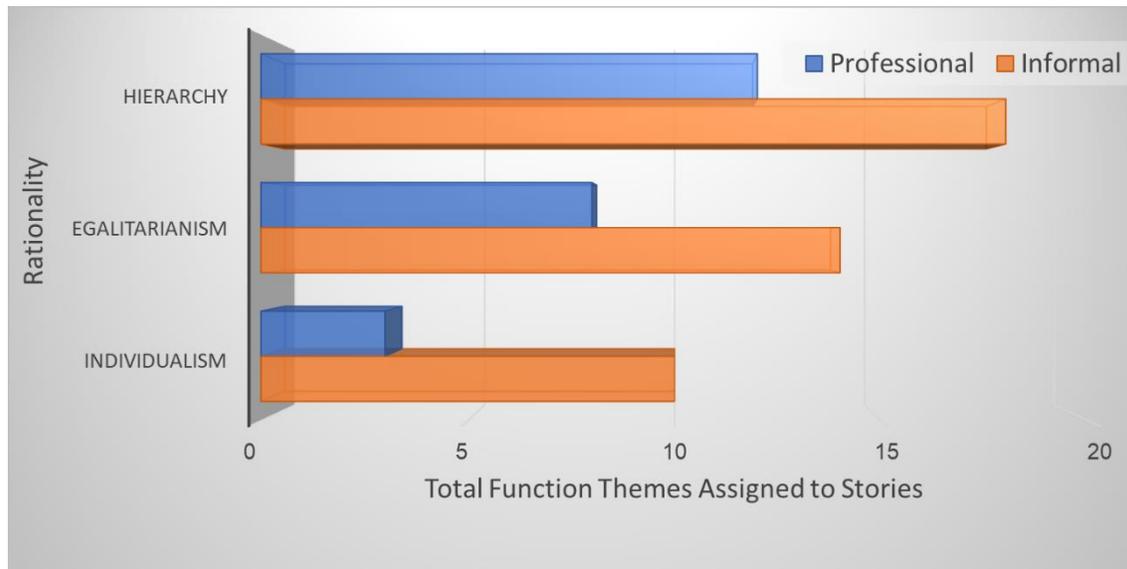


Figure 4.1 Total functions assigned to participants' stories compared with storytelling setting and matched rationality.

Settings where agendas are pre-established do not appear to facilitate the complex, open dialogue that more ordinary settings do. To support this claim, others have found that storytelling with a pre-determined agenda limits discussion, not allowing for the same deliberation as conventional storytelling (Polletta & Lee, 2006). The sociological work of Polletta and Lee (2006) claims that conventional storytelling allows people to express preferences, appreciate competing preferences, and find agreement from that appreciation; a process that sounds very similar to finding clumsy solutions.

Professional settings still contribute to storytelling and should not be ignored. However, I have emphasized that people meet and share stories in informal settings to shed light on the cultural factors of water management often overshadowed by engineering traditions (Pahl-Wostl et al., 2007; Silbernagel et al., 2015). Other ways of knowing, including TEK, LEK, and Indigenous historical knowledge, are gaining traction as evidence in environmental science, but this knowledge is gathered from life experiences, sometimes through generations (Douglas et al., 2020; Jackson et al., 2014). Therefore, professional settings alone are largely unsuitable for sharing these ways of knowing, and to ignore the stories told in informal settings would almost certainly result in their misinterpretation. I will remind the reader that stories with the purposes of

sharing TEK, LEK, and/or Indigenous historical knowledge were assigned what turned out to be the most popular function theme in this thesis: *share place-based knowledge*. This theme is explored next.

1.17.2 To Share Place-Based Knowledge

Sharing place-based knowledge for drinking water has already been explored in a Canadian context by McGregor (2012), who examined how TEK can help protect drinking water in Ontario. Place-based knowledge is also slowly being recognized by empirical environmental scientists. In a study that addressed the limitations of river system theories, Brierley et al. (2013) argue that place-based knowledge plays an important part in understanding water flows by addressing the ‘messiness’ of the real world not anticipated by algorithms. Similarly, Penny et al. (2016) supplemented their assessment of a lake in Cambodia with local knowledge. The authors explained that at Lake Yeak Loam “... changes in water quality are dramatic and highly visible, the environmental knowledge of local communities surrounding the lake may represent an important archive of water quality information” (p. 38). By integrating community place-based knowledge and quantitative measurements, they completed a water quality profile of the lake that spanned 50 years and helped to determine how much of its biogeochemical cycles were dominated by surrounding land use.

Place-based knowledge has also received attention in recent environmental peer-reviewed literature such as the recent study on water planning by Douglas et al. (2019). Water planning is being redesigned around the world to better integrate place-based knowledge in water decisions. The recent Australian study on hydro-socio-ecological relationships by Douglas et al. (2019) states that Indigenous knowledge needs to be valued and incorporated into water planning because the livelihoods of Indigenous Peoples are deeply rooted in the waters of certain places. Australia and Canada are both colonial in origin, so a parallel could be drawn between Australian water planning research and the water resource management research of Baijius and Patrick (2019) in Canada. Both studies argue that listening to the expertise of local Indigenous knowledge holders is a key step toward including Indigenous Peoples in water decisions.

It is encouraging, then, to hear from participants that place-based knowledge plays a part in SWP planning and to find it the most popular function of storytelling in their recollections. Since storytelling is a common-place activity, I argue that place-based knowledge can be very accessible, it though should be approached with respect.

1.18 Encouraging Clumsy Solutions in SWP

Cultural theory was used to determine if storytelling is valuable in SWP because it offers up the idea of clumsy solutions: the product of leveraging many different rationalities to arrive at the most effective response to a problem (Beck et al., 2018; Thompson, 2011). Determining whether storytelling is valuable when solving drinking water problems comprised the third Faucet of the Three Faucet Framework. Recall from the last chapter that while three of five possible rationalities were matched with participants' stories, the remaining two were observed in the surrounding dialogue, and the function theme *co-construct a narrative* directly spoke of collaboration in SWP. Together these findings suggest that storytelling has good potential to encourage clumsy solutions in SWP. Or, to paraphrase, the findings suggest that clumsy solutions find purchase through storytelling.

SWP is a social context where input is considered from an array of rural residents, Indigenous community members, technical professionals, and government regulators (Wang & Patrick, 2014; Ivey et al., 2006) and being able to reconcile perspectives alternative to one's own is a valuable quality in collaborative networks (Weber & Khademian, 2008). Scholars have argued that stories are integral to discussions during planning processes (Sandercock, 2003; van Hulst, 2012). These insights considered, storytelling is valuable to SWP because it presents and balances the variety of opinions voiced during SWP.

This thesis was designed around the Saskatchewan SWP context. Following this commitment, the next section considers the findings of the third Faucet as they relate to the context described in Chapter One.

1.18.1 Rationalities, Clumsy Solutions, and Context

The tendency for participants' stories to qualify as hierarchical or egalitarian speaks to the way water governance is perceived on the Prairies. The dominant scholarly view of Prairie water policy and responsibility is that it is fragmented (Bakker & Cook, 2011; Morgan et al., 2014; Wheeler & Gober 2015;). Most stories matched with either hierarchical or egalitarian rationalities, likely because water is shared and managed across the NSRB's 41,000 km² area, with input from local watershed associations and decisions of First Nation, rural municipal, provincial, and federal authorities (SWA, 2008). The hierarchical stories directed at policy gaps, regulatory inaction, or funding may have arisen because there is interjurisdictional confusion within the watershed and insufficient financial capacity (Morgan et al., 2014; Patrick, 2010).

Then, as Bakker and Cook (2011) and Wheeler and Gober (2015) argue, conflict is looming for the Prairie shared surface water supply, regarding physical and cultural rights to clean water and everyone's responsibility to protect it. Widespread concern over shared waters was a concern presented in the stories that aligned with egalitarianism. Lastly, with so many voices vying to influence water decisions, it is unlikely that private landowners are clearly heard and therefore it is not surprising that some stories matched with an individualistic viewpoint. There is a wide range of actors trying to strike balance in Prairie water governance, therefore, the value of storytelling toward clumsy solutions may extend beyond SWP.

The other important context of this study is its implications for future work with Indigenous communities. Although it does not fall into the category of Indigenous research, this thesis sought to learn from the successes of Saskatchewan SWP when planners worked with Indigenous communities. To cite a recent paper on water planning with Indigenous knowledge holders, Douglas et al. (2020) provide a recommendation that I believe supports the pursuit of clumsy solutions when working with Indigenous communities: "Water planning should draw on diverse knowledges of flow relationships, water requirements, and socio-economic and environmental impacts, including Indigenous knowledges" (p. 364). Historically, the viewpoints of Indigenous populations have been excluded from water decisions in Canada (Baijius & Patrick, 2019). Following the logic of cultural theory, to exclude a viewpoint is to ignore part of the solution. To find clumsy solutions in a Canadian drinking water context means to meaningfully engage with Indigenous viewpoints. Storytelling has been known to mobilize local knowledge about a place and frame interactions using Indigenous epistemologies (Fernández-Llamazares & Cabeza, 2017; Iseke, 2013). Since storytelling aligns with Indigenous practice and has good potential to encourage clumsy solutions, I conclude that it is a tool well suited to help improve water within Indigenous communities.

1.19 Study Limitations and Future Inquiry

In this thesis, I interpreted the perceptions and recollections of participants with guidance from various literary sources. During the analysis, a recalled story was examined because it was memorable enough to be recalled in detail and was deemed worth of sharing by a participant. The evolution of story perceptions across time and multiple retellings is not covered here but would provide a far deeper understanding of how people process, learn from, and use storytelling events.

I designed the Three Faucet Framework to be responsive to the data collected. Collecting attribute data before reporting these initial findings would have filtered participant input and compromised the natural emergence of themes. Perhaps more importantly, confidentiality was a high priority for this study due to the small network of participants, who would be easily identified by listing personal attributes here. If the network of participants had not been so small and people had not been familiar with one another, some helpful attributes would have included gender, Indigenous/non-Indigenous identity, participant level of education, experience in planning environments, relationships with locals, recall ability, understanding of the research question, and degree of trust in the researcher who performed the interviews. A follow-up study to explore the influence of different environmental and personal factors on story recall would be the next step toward understanding not only what stories do during SWP but also how they evolve and are shared.

Comparing the results of each faucet with one another would be the next level of interpretation where patterns between themes, recollections, and rationalities could be identified. In fact, I observed that after they were assigned to stories, some themes of storytelling function tended to align with some rationalities over others. An examination of the overlap between the function themes and rationalities would provide insight on how people with certain viewpoints tend to use stories. As well, this research was very theoretical in nature. Future work on storytelling would be reinforced by if links were drawn between storytelling and real-world outcomes. Lastly, the Three Faucet Framework is based on content-analysis, but a different framework employing the use of discourse analysis could alternatively be used to determine function(s) of storytelling.

1.19.1 Storytelling and Enhancing Indigenous Involvement

An essential component of water security in Canada is the reclamation of Indigenous water planning (Patrick et al., 2019). More broadly, calls have been made to better involve Indigenous Peoples in water science (Finn & Jackson, 2011), water planning (Bajius & Patrick, 2019; Douglas et al. 2019), and water governance (Arsenault et al., 2018; Bradford et al. 2016). A key part of the arguments of these works is that colonial governments have failed to consider Indigenous viewpoints on water, which differ from Western-science.

Water is thought of as sacred, a sentient being, a gift from, and the life breath of the Creator, and, is fundamental for the wellbeing of the earth and all people. This worldview defines unique socio-cultural relationships with water and informs Indigenous water management and governance processes which are divergent from, and unrepresented within current Canadian water governance frameworks. (Bradford et al., 2016, p. 269)

Bradford et al. (2016) have explained that by ignoring Indigenous voices on water issues, their values have been excluded from Canadian water decision processes, and as I stated in Chapter One, cultural theorists have shown that ignoring contentious voices will produce brittle, unsustainable solutions (Verweij et al., 2006). Following the argument for clumsy solutions, the inclusion of Indigenous viewpoints in Canada's water decision-making will ultimately produce stronger and more resilient water solutions.

The results of my thesis support that argument. I have shown that storytelling has the potential to encourage clumsy solutions, and other research explains that storytelling aligns with Indigenous practices and knowledge-sharing (Fernández-Llamazares & Cabeza; 2018; Iseke, 2013; Kovach, 2010). As well, I have shown that storytelling tends toward sharing place-based knowledge, which others have proven is often held by Indigenous knowledge keepers (Douglas et al. 2009; Herman-Mercer et al., 2016; Jackson et al., 2014). Storytelling can encourage clumsy solutions, and clumsy solutions are valuable for decisions in environmental policy (Douglas, 1968; Thompson, 2003), climate change (Verweij et al., 2006; Verweij & Thompson, 2006), and water resource management (Beck et al., 2018; Pahl-Wostl et al., 2007).



Figure 4.2 *Conceptual display of storytelling as a link between enhancing Indigenous involvement and water solutions.*

Research has shown a gap between Indigenous involvement and water solutions, especially in Canada. Given that storytelling is linked to both Indigenous practices and clumsy solutions, there is a possibility for storytelling to help bridge that gap. I recommend that future work be done to examine storytelling as a tool to enhance Indigenous involvement in water solutions.

1.20 Chapter Four Summary

Exploration in storytelling is context dependent and required some integrative work. The analytical framework I developed for storytelling function—the Three Faucet Framework—was derived from studying the context of SWP and identifying literature to match. The Three Faucet Framework may be applied to a similar study with some adjustment, but care should be taken to match the geographic and cultural characteristics of the study’s scope.

Informal settings appeared key to storytelling SWP because more functions were performed in these settings with less preparation than professional settings require. Informal settings are also likely better able to facilitate other ways of knowing, including place-based

knowledge. A thematic analysis of the interviews revealed 11 possible functions of storytelling, all of which I wish I could have explored in depth. The Three Faucet Framework was not only designed to perform a thematic analysis but also to help me understand participants' recollections and determine the value that storytelling offers. According to participants' recollections, the most popular function theme appeared to be *share place-based knowledge*, a finding that matches recent efforts to integrate LEK, TEK, and Indigenous historical knowledge into water decisions.

Storytelling was found to have good potential to encourage clumsy solutions, which are more thorough and long-lasting. The results of the third Faucet illustrated discourse about a fragmented yet shared water resource situation on the Canadian Prairies. Considering that storytelling is an accessible tool, it supports clumsy solutions and is valuable when many different prairie actors work together on water decisions. Storytelling also aligns with Indigenous epistemologies and could therefore prove valuable when researchers work with Indigenous communities, and, at a larger scale, enhance Indigenous involvement in water solutions.

There is no shortage of potential for research in storytelling since it is a widespread and accessible method of interaction. After revisiting my study objectives through every step of this project (typical of qualitative research), I can see that we have only begun to understand the potential of storytelling as a supplement to traditional engineering practices.

1.21 Conclusion

As the researcher, I set out to explore the use of storytelling in SWP planning by interviewing members of a small SWP network about their experiences. An integrative analytical framework was developed to learn from participant perceptions and recollections about storytelling. The Three Faucet Framework was designed to synthesize a list of storytelling function themes, understand participant recollections of the function themes, and determine if storytelling has the potential to encourage clumsy solutions in SWP. The results indicated that storytelling for SWP can have many functions at once and facilitate dialogue among people who see the world differently to enable clumsy yet effective solutions. The informality of a setting was also an important factor in facilitating storytelling. The scholarly contributions of this research include its analytical framework, an enhanced understanding of storytelling and how it works, the importance of place-based knowledge for water solutions, and guidance for water decision-making involving multiple viewpoints and Indigenous community work.

The findings of this thesis may feel intuitive to some, and to others, too vague to be practical, but my argument is that storytelling should be conducted with intention and awareness. More specifically, qualified professionals and policymakers need to ‘make space’ for storytelling because it can lead to better solutions and perhaps enhance Indigenous involvement. I will now explain how we might practice making space for storytelling, using the four main discussion points: storytelling functions, informal settings, place-based knowledge, and the pursuit of clumsy solutions.

First, any institutional notion that a story should serve a single pre-ordained purpose needs to be discarded. Storytelling does many things simultaneously through many different combinations of functions. One might share a story to illustrate a perception of water but also end up inspiring sympathy in the listeners and causing them to share a story that builds off the original story. The multi-faceted nature of storytelling may feel uncomfortable to those who expect a traditional meeting structure, but the concept of clumsy solutions is that we find the best solutions outside our comfort zones.

Somewhat ironically, casual environments serve to facilitate the exchange of stories. Informal settings that enable storytelling for water might be a shared meal, an outdoor tour of the area, or a break between meetings. If one is assisting with water issues in any capacity, visiting the community (or region) is essential. Visiting the location of focus not only recognizes its residents but also provides many prime opportunities for informal settings where informal storytelling can happen. The most widely recognized premise for a visit during SWP would be a tour of the community and landscape to identify features that may contribute to water contamination. I argue that since storytelling is common, place-based knowledge can be very accessible when those with the knowledge are given the space to share stories. That said, place-based knowledge and those who are generous enough to share it should be treated with respect. Place-based knowledge comes from someone’s personal experience and should never be coerced from them. To be clear, my findings suggest that storytelling from informal settings is valuable, but I entreat researchers and other professionals to engage ethically with knowledge holders in all settings. It is critical to take steps to ensure that intentions are made clear prior to any sharing of place-based knowledge.

Perhaps the most ambiguous advice this thesis gives is to pursue clumsy solutions when solving water problems. The exchange and consideration of multiple viewpoints, all five

rationalities to be exact, may sound promising from a theoretical standpoint, but what does that really look like? At the risk of being obvious, I suggest that more than one individual should speak. Not everyone will contribute a story to the dialogue, but their feedback will still add to the solution. Everyone should be encouraged to share their insights on the water topic at hand, and they should be listened to when they do. Opening the table for discussion and distributing airtime can encourage people to contribute, including more viewpoints in the SWP plan to make it more comprehensive. One strategy from a facilitation standpoint is to invite a representative of each stakeholder or rightsholder who's water access might be impacted by the discussion or possesses place-based knowledge of the issue at hand. Elders and experienced technicians should always be given a voice in water discussions because their knowledge of water is different in nature, sometimes even controversial to one another, and controversy is exactly what leads to clumsy solutions. After visiting a community (or region) of focus, making space for stories could be as simple as pausing before making any final decisions and asking colleagues to reflect on the stories they heard on location.

The stories people tell about their lives and others reveal important things about the way we affect water quality. Networks of professionals and locals find value in discussions about facing their own water challenges to suggest solutions. As well, storytelling is a practice integral to Indigenous epistemologies and should be given more attention in the pursuit of reconciliation and drinking water solutions in Canada. Storytelling needs a space, a recognition in professional water decision making but especially during the causal moments, the talks 'in between' where stories knit together the views of people who see the world differently.

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