

Western  Graduate&PostdoctoralStudies

Western University
Scholarship@Western

Electronic Thesis and Dissertation Repository

7-19-2016 12:00 AM

Finding Your Way: Navigating Online News and Opinions

Charlotte Britten

The University of Western Ontario

Supervisor

Jacquelyn Burkell

The University of Western Ontario

Graduate Program in Media Studies

A thesis submitted in partial fulfillment of the requirements for the degree in Master of Arts

© Charlotte Britten 2016

Follow this and additional works at: <https://ir.lib.uwo.ca/etd>



Part of the [Journalism Studies Commons](#)

Recommended Citation

Britten, Charlotte, "Finding Your Way: Navigating Online News and Opinions" (2016). *Electronic Thesis and Dissertation Repository*. 3871.

<https://ir.lib.uwo.ca/etd/3871>

This Dissertation/Thesis is brought to you for free and open access by Scholarship@Western. It has been accepted for inclusion in Electronic Thesis and Dissertation Repository by an authorized administrator of Scholarship@Western. For more information, please contact wlsadmin@uwo.ca.

Abstract

This study investigates how young people navigate through a number of hyperlinked online news on a specific topic and how this effects, and is affected by, their opinions. Navigating though non-linear hypertext forces readers to integrate information from different sources and make more decisions about what to read, which is more difficult than reading information presented in a linear format, but might also promote deeper engagement with that material. This study used a combination of participant observation, think-aloud protocols, and semi-structured interviews to investigate these issues as participants navigated through a curated collection of articles about the Canadian Oil Sands. Findings about how participants engage with the material, and how the pathways they create while navigating impact their opinions, are discussed.

Keywords

Hypertext, hyperlinks, online news, Internet Studies, news media, Elaboration Likelihood Model.

Acknowledgments

This document, and possibly my sanity, would not exist without the help and guidance of a huge number of people, which I now need to attempt to thank. No doubt I will forget someone—know that it isn't your assistance and guidance that was the problem, but my own forgetfulness—but I will attempt to pay tribute to the village that helped me get this done.

Firstly, my supervisor Jacquie Burkell, who did her utmost to keep me seeing the forest I was looking for, rather than getting lost in all the trees—a huge thank you. My second reader, Carole—thanks for your keen eye and thoughtful comments. Tim, for his help and guidance, and also a few firm 'no's when I started to overthink things—that is eternally helpful. My participants, who gave up an hour of their time in order to read news articles and be questioned about them by some weirdo. My family, for supporting me while I was doing this. Tea, for helping me get up in the morning, and coffee, for coming in at the end there when the tea wasn't quite doing the job. The Grad Club, for providing that coffee and also various other beverages in the evenings.

Finally, a big, big thank you to my colleagues in FIMS—Media Studies, LIS, PMC, HIS, both in the MA and PhD programs—getting to meet all of you and share this journey has been excellent, and your support has been very valuable, on campus and at work and during any and all bar nights and karaoke evenings. An especially big shout out to my cohort in Media Studies and PMC—you are all grand, thanks for being the best friends, enablers, and support system a girl could ask for.

Table of Contents

Abstract	i
Acknowledgments.....	ii
Table of Contents	iii
List of Figures	v
List of Appendices	vi
1 Introduction	1
2 Theoretical Background	4
2.1 What is Hypertext?	4
2.2 Understanding the News	5
2.3 Hypertext Theory	12
2.4 Reading Hypertext	17
2.5 Opinion Formation and Change.....	25
2.6 Hypertext and Opinion Formation: Some Possibilities	29
2.7 Conclusion(s)	32
3 Methodological Approaches	34
3.1 Theory of Methods and Key Themes.....	35
3.2 Data Collection	39
3.2.1 Participants.....	39
3.2.2 Materials	41
3.2.3 Procedure	45
3.3 Coding and Data Analysis	46
3.3.1 Previously Existing Themes	46
3.3.2 Data Analysis.....	49

3.4 Conclusion	50
4 Results	51
4.1 News Consumption Survey Results.....	52
4.2 Pathway Behaviour.....	53
4.3 Keys to Navigation and Understanding	54
4.3.1 Disorientation.....	54
4.3.2 The Need for Balance	57
4.3.3 Filling in the Gaps.....	59
4.3.4 Evaluating Source Information	61
4.3.5 Decision Making: To read or not to read	63
4.3.6 Integration of Information.....	66
4.3.7 Critiquing Information	68
4.4 Navigating and Opinions	71
4.4.1 Opinion Reinforcement.....	72
4.4.2 Opinion Formation.....	75
4.4.3 Resisting Opinion Formation.....	77
4.5 Conclusion	79
5 Discussion and Conclusion	80
5.1 Limitations	81
5.2 Discussion.....	82
5.3 Further Research	90
Bibliography	91
Appendices.....	99
Curriculum Vitae	111

List of Figures

Figure 1: Example of an Article in the Walled Garden	42
--	----

List of Appendices

Appendix A: List of Walled Garden Articles	99
Appendix B: News Consumption Survey	101
Appendix C: News Consumption Survey Data	101
Appendix D: Complete Instructions to Participants	102
Appendix E: Pathway Map	104
Appendix F: Pathway Data-Specific Paths	104
Appendix G: Ethics Approval.....	105
Appendix H: Recruitment Poster	106
Appendix I: Letter of Information and Consent	107
Appendix J: Walled Garden Structure.....	110

1 Introduction

Canadian democratic society is based on the premise that citizens are engaged in and informed about the political, economic, social and environmental state of their own society. One important way that the public becomes informed about their society is through news. The forms through which news is accessed by the public have changed with technological advances. While older news media such as newspapers and magazines still exist, many people are now accessing news online, either on mobile browsers or on computers, and often not accessing it through one particular source, but rather, by following hyperlinks between news articles from within the text. These links might clarify points, link back to other articles on the same topic or to source material. When these hyperlinks are present, the structure readers encounter promotes reading in a non-linear fashion, since it provides the opportunity to follow the links and to create a reading order chosen by the reader.

This study investigates how young (18-24) readers of hyperlinked online news navigate, understand, and form opinions about that news. The research questions are informed by research about the role of the news in society, hypertext and hypertext theory, as well as psychological research that deals both with the process of reading hypertext as well as an understanding of opinion formation and reinforcement.

Previous research suggests that there are some disadvantages to reading hypertext—readers become confused and lost in the material, unable to read the information in an order that makes sense to them. In order to make sense of non-linear information, readers must integrate the information they learn from multiple sources in order to create a cohesive whole. This process of integrating information is difficult and requires focus, since the reader must understand each piece of information in order to combine them. However, if this occurs, it promotes better learning since it also requires thinking about the material. In terms of opinion formation, the literature suggested that this should mean that readers critically consider the information presented and thus form their opinions based on the quality of the argument and the information provided. Research on opinion

formation and presentation order suggests that the final article readers see might affect their opinion more than other articles.

Participants read through a walled garden¹ of articles on the Canadian Oil Sands and the use of pipelines to transport that oil. While doing so, they reported on their thought process by trying to “think aloud”, and the pathway that they took through the articles was recorded. They also reported on their opinion (or lack thereof) before and after reading the articles. After reading they also participated in a semi-structured interview about how they read through the material and why they held the opinion they did. The resulting combination of participant observation data, think-aloud data, and semi-structured interview data was then analyzed for key themes in how participants navigated through and understood the material, and how this affected opinion formation.

The study found that participants have mental strategies that allow them to navigate the material without getting confused, and that they try to evaluate the material as they read. This helps them to decide what information they should read, when they have read enough information, or what they need to read. Participants also showed evidence of integrating the information they read, and responding to it with counter arguments and contrary evidence. While reading through the material in the context of the study, which limited distractions and offered a perfectly balanced set of articles and links, participants were engaged in reading through the material, and offered thoughtful and considered critiques of the information that was presented.

In terms of participants’ opinions, for those who were informed about the material and had previously formed opinions, those opinions were reinforced by reading through various articles and comparing or integrating that information with what they already knew. Participants who did not have previous opinions and started with an article that was against the pipelines ended the study against the pipelines, and showed evidence of

¹ A Walled Garden is a computer science term that refers to a restricted range of information to which subscribers to a particular service are limited. In this case, the walled garden consisted of a website created by myself which contained all the articles used in the study, and controlled what they accessed.

counter-argumentation and information integration based on the content of the first article. Participants who did not have an opinion and started in the pro-pipeline condition did not form an opinion, and did not show evidence of integrating information between articles, only with their previous knowledge. They explained that they felt unable to trust the information presented and thus could not use it to form an opinion.

The study emphasizes the complexity of navigation and understanding when reading through hypertextual news articles. Although further research is necessary, the data gathered in this study suggests that a knowledge base—which a reader can use to navigate, critique, and analyze the material they read—is important when expressing an opinion. This base may come from an early article that is persuasive for the specific reader, or their prior knowledge.

I argue that not having a knowledge base indicates that readers might not be able to form, or feel comfortable expressing, an opinion. This is problematic in terms of the fact that having an opinion about topics in the news is important to being involved in, and making decisions about, the democratic process. While the results of the study seem to show that participants are able to critically engage with and critique the material they read in terms of forming a measured opinion, the fact that lacking a knowledge base seemed to seriously affect whether participants were able to express an opinion at all is concerning in terms of considering the need for engagement with the political process, and encouraging such considerations as a part of public and civic duty. As a whole, understanding how young people navigate through and understand online news, and how they form opinions about that news, is important. It provides information about readers understanding and engagement with the news, and affects its existing role in the aforementioned political system.

2 Theoretical Background

Individually, hypertext, opinion formation and the news are all complex topics. Although each has been separately investigated from a variety of angles and within a variety of disciplines, they have not been frequently studied together. Understanding the theoretical foundations behind these topics as well as the empirical literature on the topics will provide a background for future research as well as a theoretical foundation for understanding the research of this thesis. This chapter provided both a literature review and a theoretical background, and will therefore introduce many of the key points and ideas that ground the work of this thesis.

I begin with a brief discussion of hypertext itself, followed by a discussion of the political economy of news media in order to contextualize the importance of studying hypertext and opinion formation in this context. I then summarize how hypertext has been used and studied in Communication and Media Studies, as well as some of the issues with this focus, specifically techno-optimism and a lack of focus on reader-hypertext interaction. I then turn to psychological research for some guidance to understand how readers understand and interact with hypertext. I give a brief summary of the Elaboration Likelihood Model, which motivates my understanding of opinion formation and change, and consider how opinion formation and hypertext might interact. Finally, I conclude by exploring how the issues of reader control and opinion formation can be explored within the context of my research.

2.1 What is Hypertext?

The most basic question that must be answered before moving any further is simple: What is hypertext? Hypertext has been described as “consist[ing] of discrete information packets that can often be accessed in virtually any order”². In practice, hypertext links pieces of information using links through which the reader must navigate. As a result,

² Grafton, Carl, and Anne Permaloff. “Hypertext and Hypermedia.” *PS: Political Science and Politics* 24, no. 4 (December 1, 1991): 724–30. doi:[10.2307/419416](https://doi.org/10.2307/419416). 724.

navigation through this information is non-linear. Linear texts are works that expect linearity: the reader should start at the beginning and move towards the end. These texts have a specific order in which the information is presented. Non-linear texts have no expectation that the information will be accessed in a specific order, and information is conceptualised as a map-like structure of concepts where readers can fill in “gaps” by reading specific articles, or ignore pieces of information which are not relevant to them.

While all hypertext is non-linear, hypertext is often divided into two specific types for clarity: hierarchical and network. In hierarchical texts, the “discrete information packets” are specifically organized so that the information that is more general, such as summaries, is at the top of the hierarchy, and more specific information is lower down, although readers can still access information at any level. An example of this would be a table of contents style linking, where topics are then broken down in to subtopics in order to make access easier. However, most hypertext is not in this form. Instead, it is in the form referred to as “network” hypertext. This type of hypertext lacks a visible structure, and information is not organized by the author(s)—ideas and concepts are linked, but the reading order is created by the reader. This is the type of hypertext that online news information usually takes, since information is linked from each article without a focus on the overall structure of all articles and links together. In order to understand why news hypertext takes the specific form it does, however, it is necessary to understand first some of the issues that surround the news in general.

2.2 Understanding the News

Understanding news requires a discussion of what news actually is, yet providing a definition of what constitutes news is not a simple task. For the purposes of this project, specific events are defined as news when they have been written up and published by a journalist for a news organization. Within this definition, citizen journalism is not defined as news, and news refers specifically to the output of journalist and news media corporations—articles, both online and in print. TV broadcasts, podcasts, and radio shows would also fall under this definition of news media, but since this thesis looks specifically at *reading* news, written articles and columns are the focus. Focusing on the

news is important since it can shape public opinion, and the underlying assumption regarding the role of news is that it provides information about important events for the good of society. In this ideal model, “journalists should encourage and nurture good citizenship, most prominently by providing the information citizens need to effectively participate in democratic governance”³. Within this framework, news exists as a part of the democratic system, wherein it provides checks and balances for those in power, and information to the general populace.

However, the definition above emphasizes the role of news producers as arbiters of what makes the news and what doesn't. This means that we cannot consider news without also considering the way in which news is produced. Obviously, the understanding the production of news is a huge task full of expansive and detailed work, but I attempt here to provide a brief summary of some of the major ideas and theories as they relate to my work. What actually makes the news cannot be separated from the political and economic conditions that surround its production. News creators are the ones who decide which events are important enough, or interesting enough, to make the news. The people making these decisions have access to the financial backing and institutional structures necessary to create media content, particularly mass media content. This means that they have power over public opinion and thus, the democratic process.

In order to understand the circumstances of news production Amber Boydston's *Making the News*⁴ creates a tripartite model of the circumstances which influence news creation. The first part of this model considers news media as an organizational process, wherein news creators essentially curate “the day's events”⁵. However, this curation is affected by two other processes—the media as a marketplace, where what is produced must be sold to consumers and thus is driven economic concerns, and the political agendas of both

³ Uscinski, Joseph E. *The People's News: Media, Politics, and the Demands of Capitalism*. New York: New York University Press, 2014. 5

⁴ Boydston, Amber E. *Making the News: Politics, the Media, and Agenda Setting*. Chicago ; London: The University of Chicago Press, 2013.

⁵ Ibid, 6

individual producers and news organizations. Boydston argues that political agendas act as “*disproportionate information processing systems*”⁶ and that these inform and control what events actually become news at the stage of curation, and how much time and space is spent covering these events. Specifically focusing in on these two processes, that of the market and the political agenda of news producers, provides an overview of how news media production is shaped by these forces.

Mass media has been criticized for serving the political agendas of those who have the power and money to produce it⁷, as well as those who provide that money, such as advertisers⁸, before. Noam Chomsky and Ed Herman’s *Manufacturing Consent: The Political Economy of the Mass Media* proposed a Propaganda Model of Mass Media, which argues that the media acts as propaganda by producing media through four (or five) specific filters⁹. This means that when the assumption is made that the news provides information that people should know, what constitutes the news is influenced by these filters and by special interest groups who have their own agenda in mind¹⁰. This allows the political agendas of the producers, advertisers, and sources, in particular, to influence and shape news production.

Boydston notes that the news is also a commodity, and its production is driven by market forces. A commodity focus can be seen in the advertising filter of Chomsky and Herman’s Propaganda Model. However, the focus of that model was more on media producing a political agenda in line with what advertisers want, in order to seem attractive to them. However, when the news is viewed as a commodity, its value becomes not its quality, but the money it generates. This means that news is often defined by

⁶ Ibid, 6

⁷ Herman, Edward S., and Noam Chomsky. *Manufacturing Consent: The Political Economy of the Mass Media*. Knopf Doubleday Publishing Group, 2011.

⁸ Ibid xi.

⁹ These filters includes Ownership, Advertising, Sourcing (or journalism as governmental and corporate PR rather than investigative journalism), Flak (push back from audiences when unpopular ideas or stories are published) and anti-communism (when the model was proposed) or anti-terrorism (currently).

¹⁰ Ibid.

audience desire “for entertainment, for information and for gratification”¹¹. Of these only information contributes to the goal of creating informed citizens, and even in this case “firms may follow audience concerns and report stories containing information that address those specific concerns”¹². Rather than being chosen for its content, information is reported to fill specific desires of the public. This can be a good thing if the public is aware of what information they need. However, if this is the model for how the news should function, it means assuming that public demand is always in the best interests of the public, which is not necessarily the case¹³. The purpose of the news is not always to provide people with the information they need to be good and engaged citizens; instead, the goal is often to provide people with what they want and, most importantly, are willing to buy.

These models offer ways of looking at issues of news production, but are not specific to any type of news, and the Propaganda Model of Mass Media was created in response to traditional forms of media such as television, newspapers and radio. However, this project focuses specifically on online news media. When it comes to searching for news, the use of traditional news media is declining, while digital media use is increasing¹⁴. According to a self-report survey in which people reported where they got news the previous day, television remained the top news media as recently as 2012. The use of television for news consumption is on a general decline, however, moving from 68% in 1991 to 55% in 2012. In contrast, 29% of survey participants in 2008, and 39% in 2012¹⁵ reported accessing the news through online media (including online written journalism and video content). Digital media has become a major news source and is gaining in popularity, and it has structural differences from traditional news—one of which is the

¹¹ Uscinski, 76

¹² Ibid 76.

¹³ Ibid, 77.

¹⁴ - “In Changing News Landscape, Even Television Is Vulnerable.” *Pew Research Center for the People and the Press*. Accessed January 5, 2016. <http://www.people-press.org/2012/09/27/in-changing-news-landscape-even-television-is-vulnerable/>.

¹⁵ Ibid.

presence of hypertext. In digital media where news is hyperlinked and the reader is able to integrate the hyperlinks themselves, the power of the news organization to control how readers view the news is reduced.

Hypertext means that readers can be pointed to other articles or source material from within any particular news article, accessible by simply clicking a link. This easy access allows readers to follow their own interests, albeit within the confines of the links provided¹⁶. Within this context, links are thought to increase interactivity, credibility, transparency and diversity¹⁷. Credibility and transparency can be increased because links can give readers access to the source material and background to the story. Providing links to other websites with alternate views and opinions might increase the diversity of the stories being told. These characteristics of links seem as though they could offer a counter to the power traditional media has—in particular, transparency and diversity would help counteract the power of news producers by pointed to alternative interpretations of events, and making it clear to readers what the sources and background of any particular article is. However, for this to function, the links must both be present and used by the reader.

Research on news information online, however, has demonstrated that while anyone can¹⁸ be a content creator, becoming a major news producer is not as accessible. Many legacy news sources have had a fairly easy transition in the move to online spaces, and remain major stakeholders in the news industry, bringing with them the same issues of ownership. Of the top 10 digital news entities viewed in 2015, only two (The Huffington Post and BuzzFeed) were online only—the other eight were affiliated with television

¹⁶ Sandberg, Kate E. “Hypertext: Its Nature and Challenges for College Students” *Journal of College Reading and Learning* 44, no. 1 (September 1, 2013): 51–71. http://resolver.scholarsportal.info/resolve/10790195/v44i0001/51_hinacfcs.xml.

¹⁷ De Maeyer, Juliette. “THE JOURNALISTIC HYPERLINK” *Journalism Practice* 6, no. 5–6 (October 1, 2012): 692–701. http://resolver.scholarsportal.info/resolve/17512786/v6i5-6/692_tjh.xml.

¹⁸ Can is used very specifically here, and it should not be confused with “are likely to”—other concerns such as time and money, would affect people’s ability to create content.

channels or newspapers, such as CNN and New York Times¹⁹. Perhaps more problematic is the fact that most websites link mainly to their own internal content rather than offering different options through their links, since links are used to generate more web traffic for their own site²⁰, and efforts are made to keep consumers from using a competitor's product. For example, major news outlets such as The Guardian, The New York Times and the Washington Post averaged 2.4, 6.8, and 3.3 links per article, including links to their own sites²¹. Only 0.2 (8.3% of all links), 1.2 (17.6%) and 0.3 (9%) of those links per article linked outside of their own website, respectively²². However, while news outlets tend to link to their own websites, blogs and social media often collate links from multiple sources on a specific story or topic, which offers more perspectives than just one source.

This suggests that while such news producers have taken on the characteristics of online media including using hyperlinks between articles, it is not actually providing the increased diversity of content that it could provide²³. For example, research has demonstrated that hyperlink structures in online news create systems where information flows from a few countries with established news sources to the rest of the world and then stops, essentially replicating old power structures with new technology²⁴. This means that the countries which are established as world powers, particularly the United States and European countries, tend to produce the news sources linked back to by other

¹⁹ Mitchell, Amy. "State of the News Media 2015." *Pew Research Center's Journalism Project*. Accessed January 5, 2016. <http://www.journalism.org/2015/04/29/state-of-the-news-media-2015/>.

²⁰ De Maeyer, Juliette. "THE JOURNALISTIC HYPERLINK"

²¹ Stray, Jonathan. "Linking by the Numbers: How News Organizations Are Using Links (or Not)." *Nieman Lab*. Accessed July 9, 2015. <http://www.niemanlab.org/2010/06/linking-by-the-numbers-how-news-organizations-are-using-links-or-not/>.

²² Ibid.

²³ De Maeyer, Juliette. "THE JOURNALISTIC HYPERLINK"

²⁴ Himelboim, Itai. "The International Network Structure of News Media: An Analysis of Hyperlinks Usage in News Web Sites" *Journalism and Mass Communication Quarterly* 54, no. 3 (August 17, 2010): 373–90. http://resolver.scholarsportal.info/resolve/08838151/v54i0003/373_tinsonhuinws.xml.

countries' journalism, further entrenching their power in the media, rather than these major news sources linking out to increase diversity. Despite the changes that have occurred in the structure of and access to online news sources, there is a lack of evidence that this has had a major effect on the power dynamics of the media in terms of what is being produced.

This summary only briefly discusses the issues of news production from a political economy standpoint. Obviously, many people have investigated news production on these levels, and done so far more thoughtfully and extensively. Focusing solely on the production of news media, however, means looking at only a part of the process. It has been suggested that online news offers a potential disruption of the power over news production that was traditionally held by large media organization. This is because it might increase the range of stories being told and because it provides links so that readers can follow up on their interests. In order to investigate this disruption, however, the nature of linking needs to be studied, as does how people respond to and interact with these links. This study specifically focuses on the second portion of this question—how people respond to and interact with hyperlinks in the news.

Without knowing how people interact with media like hypertext, critiques of production are based on assumptions of how people will read media that is produced in a different way that may not be true. It is thus necessary to consider both production and consumption of news media. While navigating within a structure of news media which is produced, readers have some agency in terms of what they choose to read, and can form their understanding of the news based on what they have read, and hypertext promotes making decisions and choices about what to read. As previously mentioned, the presence of hypertext does not mean that it is being used or explain how it is being used. Thus, it becomes necessary to turn to understandings of the tension between author and reader, or producer and consumer, and the spaces and texts that embody those tensions—specifically, hypertext.

2.3 Hypertext Theory

Hypertext studies was a specific field of research in the 1980s and 1990s, which looked specifically at how hypertext changed the reading process, the role of the writers and readers. It was populated mainly by scholars from literary studies and computer science, and could be characterized as techno-optimist and “filled with praise for the medium [of hypertext].”²⁵ The field began to die off with the bursting of the dotcom bubble, the turn from techno-optimism in the academy, and the decline of postmodern theory, which informed many of the literary scholars involved. While problems plague this work, critically re-examining this body of research can help to motivate study of technological trends today²⁶. Hypertext theory looks at specific features of hypertext such as non-linearity, and navigation. This section provides a summary of the broad theoretical concerns which relate to the interactions of a specific reader with hypertext, and, like political economic understandings of news media, is broadly concerned with issues of power and control.

In general, hypertext theory focuses on the non-linearity of online text, a system wherein chunks or nodes of text were connected by links which could be followed (or not followed) by the user. This is married with the literary theory of the postmodernists to explore the critical implications of hypertext, and, it could be argued, to combine literary theory with the technologies of digital age. Predictions that hypertext would create readers who were completely and utterly in control of their own learning, able to understand and evaluate any information they came across, did not come to pass—ask any University professor—and the decline of techno-optimism and post-modernism seemed to be the nails in the coffin of hypertext theory.

²⁵ Baehr, Craig, and Susan M. Lang. “Hypertext Theory: Rethinking and Reformulating What We Know, Web 2.0.” *Journal of Technical Writing & Communication* 42, no. 1 (March 2012): 39–56.
<http://search.ebscohost.com/login.aspx?direct=true&db=ufh&AN=70169980&site=ehost-live>. 41

²⁶ Ibid.

In order to understand the techno-optimism of hypertext theory, it is necessary to understand its context. In the late 80s and early 90s, there was a strong cultural myth that changes in technology would also bring about major changes and advancements in society. This myth is referred to as “the digital sublime”, a term coined by Vincent Mosco. He argues that public responses to new technologies are often not responses to the technologies themselves, but instead were informed by a cultural myth that points “to an intense longing for a promised community, a public democracy.” The publication of his book *The Digital Sublime*²⁷ (2004) is also a key moment in the turn away from techno-optimism in the academy. Rather than think critically about new technologies, Mosco argues, we create narratives that give the technologies themselves the power to change our lives. These are “stories that animate individuals and societies by providing paths to transcendence that lift people out of the banality of everyday life”²⁸, and similar myths about cyberspace technologies can be seen in the public responses to the television, the radio and the newspaper. Many of the specific predictions of hypertext theory are obviously informed by these myths and desires, but this does not mean that all research and ideas which were created within this context are entirely useless—instead, it is necessary to critically examine such work in order to determine its merit.

In this vein, Baehr and Lang argue that hypertext studies have underpinned much of work which goes into studying technological advances today²⁹. They suggest hypertext theory has become more relevant with the rise of Web 2.0, which has much more of an emphasis on user-flexibility than its predecessor—and a component of this is hyperlinking. Hypertext theory, according to them, “is capable of being more fully realized”³⁰ in Web 2.0, and can be used as a background to investigate current technological trends, although it should be dealt with carefully in order to deal with the issues which plagued it, as well

²⁷ Mosco, Vincent. *The Digital Sublime*. MIT Press. 2004.

²⁸ *Ibid.* 3.

²⁹ Baehr, Craig, and Susan M. Lang. “Hypertext Theory: Rethinking and Reformulating What We Know, Web 2.0.”

³⁰ *Ibid.* 53.

as the historical changes between hypertext in the late 1980s and current versions. In order to explore the issues of theoretical hypertext work, and to ground and motivate some of my questions about hypertext and navigation, I use the work of George Landow as a case study to look at the problems of hypertext theory, and to consider what we can take from it while researching digital technologies today.

Landow's book *Hypertext*³¹ and its subsequent editions *Hypertext 2.0*³² and *3.0*³³ suggests that hypertext itself is a radically different way of presenting and reading information. He suggests that hypertext, which he argues lacks an inherent structure, is "decentered"³⁴ information, and that "anyone who uses hypertext makes his or her own interests the de facto organizing principle (or center) for the investigation at the moment."³⁵ Hypertext, he argues, allows people to follow their own interests, arguing that this makes them more intelligent, active thinkers, able to think critically about the information they access.

In making this argument, Landow builds on reception theory and reader response theories from English literature and cultural studies, which focus on the role of the reader or audience in understanding or interpreting the material they read.³⁶ In this research, some

³¹ Landow, George P. *Hypertext Parallax: Re-Visions of Culture and Society*. Baltimore: Johns Hopkins University Press, 1992.

³² ———. *Hypertext 2.0 Parallax: Re-Visions of Culture and Society*. JHU Press, 1997

³³ ———. *Hypertext 3.0: Critical Theory and New Media in an Era of Globalization*. JHU Press, 2006

³⁴ At one point, Landow refers to hypertext as "digitized Derrida" (Landow, 1). Derrida's famous argument on decentering, often whittled down to the pithy aphorism of "there is no center" suggests that it is a mistake to assume that the human sciences is governed by constant structure of knowledge and morality, which is held in place by some consistent truth or objective reality—the centre. He points out that this centre has, historically, changed. In the academy of the middle ages, the superiority of God above all was taken as a given, and that center was later replaced by the superiority of man and his ability to reason. The fact that the centre can be changed, Derrida argues, means that its very existence is suspect. This 'lack of center' has been applied to hypertext, since it lacks an inherent structure that privileges one piece of information above others.

³⁵ Landow, 37.

³⁶ Reader response theory was built in many ways on Barthes' *The Death of The Author* and subsequent work, which Landow uses to ground his discussion, as well as other major Reader-Response theorists such as Iser and Fish. Unfortunately, dealing in depth with the theoretical foundations of reader-response theory is outside the scope of this particularly project.

texts (such as traditional novels) are considered simply to promote reading without deep critical engagement, while other texts, such as postmodern novels, are thought to give more power to the reader as they offer the possibility of different pathways through the material. According to Landow, hypertext takes the idea of text that is navigated by the reader and makes it explicit, by writing text that is actually navigated through on a computer. Hypertext also moves these types of texts beyond literature as it is used for educational and other online materials.

Landow suggests that hypertext changes how we read, so that people take responsibility for their own reading. His particular research focused on students, making this a pedagogical change. It could be argued that students have always been asked to take responsibility for their own reading, and, after all, cannot really be forced what they do not want. However, hypertext promotes decision-making and choice about what to read through its structure: not only is choice a *possibility* for readers, it is encouraged. He also argues that this means people are more likely to organize what they learn around their own interests. This disrupts the power dynamic wherein information is organized to support the argument of the author—instead, the reader focuses their own ideas at the centre, and reads in ways which support that. The reader takes on some of the characteristics of an author, and disrupts that traditional form of author who produces, reader who consumes. This moves the discussion from pedagogy to politics and control, particularly if applied to issues such as news media. Landow argues that “hypertext has the potential, thus far only partially realized, to be a democratic or multicentered system.”³⁷

Understanding the broad theoretical implications of hypertext is important, but if hypertext is considered as theoretical concept alone without a consideration of how readers respond to the ‘read object’, hypertext studies could lose contact with how people actually read, or make suggestions that are simply pure hyperbole. For example, in one particular moment of hyperbole, Landow argues that “hypertext answers teachers’ sincere

³⁷ Ibid. 343-344

prayer for active, independent minded students who take more responsibility for their education and are not afraid to challenge and disagree.”³⁸ This is a bold statement—it is highly unlikely that students, a large and complicated group comprising many different individuals, would suddenly become different people with the addition of new technology. While many students are committed and intelligent, they are not all independent geniuses who take responsibility for their own education and freely challenge and disagree at all times, and even if they were, it would be extremely difficult to attribute this change to hypertext alone.

Landow himself realises the overstatement he has made about what hypertext can do in the introduction of the third edition, *Hypertext 3.0*, in particular pointing to the changes in the way new media was thought of after the dotcom bust and the publishing of Vincent Mosco’s *The Digital Sublime: Myth Power and Cyberspace*. He accepts that his narrative of hypertext might be influenced by these myths of the Digital Sublime, but argues that “one of the few weaknesses in [Mosco’s] convincing, if limited, analysis lies in the fact that it so emphasizes myth as a social construction born from a community’s need that it never inquires if any of these myths about cyberspace proved to have roots in fact.”³⁹ In some ways, the same critique could be made of Landow’s work. His argument hinges on the fact that he believes that hypertext changes how people read—but his evidence and examples are from hypertext itself or his own experiences as a teacher or a reader of hypertext, not from audience studies or reports from readers who don’t hold a PhD., which may be quite different from those who do.

Despite its issues, Landow’s work is valuable in that it focuses on hypertext and navigation, and relates this to larger political concerns of power and control. While his argument that hypermedia will create “active, independent minded students who take more responsibility for their education and are not afraid to challenge and disagree”⁴⁰ is

³⁸ Landow 268.

³⁹ Landow, 2006. Xii.

⁴⁰ Landow, 1997, 268.

overstated, his argument that hypertext reading promotes individual thinking is more realistic. He states that “readers of large bodies of informational hypermedia create the document they read from the informed choices they make”⁴¹. Arguably, this is true for all texts at a broad level since people can read search out newspapers, magazine articles, or books that match their interests, and read only what they like. This is laborious process, however, and hypertext provides that opportunity within one physical object.

Hyperlinked text does provide readers which the ability to choose what they read in a direct and immediate fashion, and it is possible that how they chose to access information will affect how they think about it.

As a whole, the discussion above contextualizes the way that hypertext contains many complicated and contentious concerns, as articulated by hypertext theory. Within hypertext theory, the word hypertext refers to something which is more concept than object, shorthand to describe information that isn't in a linear form, both on the internet and off. However, hypertext is also an object, a specific form of text that is linked by code and accessible through navigation on a computer. Considering hypertext as only a concept, without a recognizing how people actually use and interact with it, is a problem. The conceptual issues of hypertext must be explored while also considering hypertext as a real object, with which individuals interact.

2.4 Reading Hypertext

While hypertext provides the possibility of critically investigating and comparing theoretical studying and empirical work, the actual work that has been produced doesn't always take advantage of that possibility. This raises the question of what has been empirically demonstrated about how people read hypertext. Psychological research has examined the effect of non-linear text organization in learning and education, thus providing empirical evidence of how people *do* read hypertext and the consequences of reading this type of non-linear material. However, very little of this research looks at

⁴¹ Landow, 2006, 9.

reading for pleasure, but reading in order to learn, in an academic setting. This study takes the purpose of reading news to be learning about the state of one's society in order to participate effectively in a democratic system, so it considers the purpose of reading news to primarily be learning. That is not the only purpose of reading news, but considering the effect of other motivations on reading online hypertext news outside the scope of this project.

In fact, quantitative research has not shown that hypermedia is a better learning tool than traditional paper based text. A meta-analysis of hypertext studies⁴² indicated that there were no major differences in comprehension between the two forms. When the scope was narrowed to look at the organization and linearity of texts, rather than simply comparing paper and computer based texts, more strongly linear texts seemed to promote better comprehension than did non-linear texts.⁴³ As well, readers of hypertext, particularly less organized network hypertext, reported disorientation. Disorientation occurs when the reader of an online and hyperlinked text finds it incoherent. This reader then feels lost and is unable to decide what line of research they should follow⁴⁴. This impairs learning. Disorientation is particularly noticeable in participants who do not have a background in the subject or generally had difficulty when learning new information⁴⁵.

One potential reason for disorientation lies in the difficulty of navigating networked hypertext. When navigating hypertext, not only must the reader be able to read and understand the content of the material, but they must also have an idea of where they are

⁴² Dillon, Andrew, and Ralph Gabbard. "Hypermedia as an Educational Technology: A Review of the Quantitative Research Literature on Learner Comprehension, Control, and Style." *Review of Educational Research* 68, no. 3 (1998): 322–49. Chen, Chaomei and Roy Rada. "Interacting With Hypertext: A Meta-Analysis of Experimental Studies," *Human Computer Interaction* 11, no 2. June 1996.

⁴³ McEneaney, John E. "Does Hypertext Disadvantage Less Able Readers?" *Journal of Educational Computing Research* 29, no. 1 (2003): 1–12. Schwartz, Neil H., Christopher Andersen, Namsoo Hong, Bruce Howard, and Steven McGee. "The Influence of Metacognitive Skills on Learners' Memory of Information in a Hypermedia Environment." *Journal of Educational Computing Research* 31, no. 1 (July 1, 2004): 77–93. doi:[10.2190/JE7W-VL6W-RNYF-RD4M](https://doi.org/10.2190/JE7W-VL6W-RNYF-RD4M).

⁴⁴ Sandberg, Kate E. "Hypertext: Its Nature and Challenges for College Students"

⁴⁵ Ibid.

in within the greater context of the hypertext. This is more difficult than simply reading and trying to learn the material. Add to this the fact that the reader has to decide to follow or ignore a link each time they see one, and the fact that they then have to integrate information which may well be from different sources into something approaching a coherent whole, and the fact that disorientation sometimes occurs begins to make sense—in fact, it may seem more surprising that disorientation only occurs some of the time!

DeStefano and LeFevre's 2007 meta-analysis of hypertext reading⁴⁶ provides an in depth overview of research on hypertext. They found that the features of hypertext increased reading difficulty and could exceed reader's abilities, noting that the studies looked at found these effects to be far greater for participants with low background knowledge about the topic. They offer a model for the increased effort of reading hypertext, based on the decision- making process at each link. In traditional, linear text, they argue, the reader only has two choices—to go forward, or to go back and reread something in the event that they didn't understand it. In hypertext, each time a link appears the reader has three options— to continue what she was reading, to go back, or to follow the link. This makes the decision more difficult and increases the necessary effort. As such, DeStefano and LeFevre hypothesized that a greater number of links would increase the effort required to read a hypertext, since a greater number of links would require more decision making than reading a linear text.

Given the proposal made by DeStefano and LeFevre⁴⁷ that increased effort would be related to the number of hyperlinks, Madrid⁴⁸ created a study regarding the effects of the number of hyperlinks on learning. They compared effort and learning of texts with 3 or 8 hyperlinks within the text. They did not find an overall effect for the number of

⁴⁶ DeStefano, Diana and Jo-Anne Lefevre "Cognitive Load in Hypertext Reading: A Review." *Computers in Human Behavior* 23, no. 3 (2007.): 1616–41.

⁴⁷ Ibid.

⁴⁸ Madrid, Ignacio R. "The Effects of the Number of Links and Navigation Support on Cognitive Load and Learning with Hypertext: The Mediating Role of Reading Order." *Computers in Human Behavior* 25, no. 1 (January 1, 2009): 66–75.

hyperlinks when those links were in a separate menu from the article. However, they found that readers were working harder in the moment when they were actively making a decision compared to when they were simply reading. Thus, the number of possible links in a text (3 or 8) did not seem to matter—making the decision at all seemed to be responsible for the increased effort.

Madrid et al. did find that participants who managed to select a highly coherent reading order—which they defined as one where information seemed to build on articles previously read—found the reading process less effortful than those who chose a reading order with low coherence⁴⁹. This indicates that perhaps the major factor that increases the cognitive load is not the decision making process, but is instead the effort required to integrate the disparate material. However, it should also be noted that Madrid separated the links from the text in a menu, where DeStefano and Lefevre’s model was based on in-text links. The separation of reading and decision making into two separate conditions would most likely have affected overall cognitive load results, since two separate reading and decision making conditions logically seems easier than one condition where the participant must perform both tasks. Therefore, while Madrid et al. found that the major increase to effort was in integrating information, it is entirely possible that the decision-making might play a bigger role in increasing cognitive load when links are integrated with the text.

Whether the increased effort is due to the decision-making process, as proposed by DeStefano and Lefevre⁵⁰, or the integration of information as proposed by Madrid et al.,⁵¹ the potential for increased effort when reading non-linear text has important implications for reading behaviour, and could impact people’s willingness to continue to interact with media and the amount of time they are likely to spend with it. The presence

⁴⁹ Madrid. “The Effects of the Number of Links and Navigation Support on Cognitive Load and Learning with Hypertext: The Mediating Role of Reading Order.”

⁵⁰ DeStefano and Lefevre. “Cognitive Load in Hypertext Reading: A Review.”

⁵¹ Madrid. “The Effects of the Number of Links and Navigation Support on Cognitive Load and Learning with Hypertext: The Mediating Role of Reading Order.”

of hyperlinks increases the necessary effort in the reading processes by forcing readers to make decisions about what to read. Moreover, the lack of coherence that comes from navigation within a hypertext environment could also make the integration of information into a coherent knowledge base more difficult.

A need for effort on the part of the reader is not necessarily negative, as learning is a process which requires effort. Increased effort has been linked with how well information is known and remembered⁵². However, if the effort required is beyond what the learner is able or willing to give, the impact of increased effort can be negative. It is natural to want the greatest effect out of the least amount of work, and humans will naturally choose to expend less effort when possible⁵³. In the case of reading news media, where an understanding of what is presented might not be immediately relevant or important to the daily life of the reader, the need for increased effort might make people less likely to read the news. Moos⁵⁴ found that extrinsic motivation, such as a grade or a reward from a teacher or researcher, was a significant predictor of participant's ability to navigate through and learn from hypermedia systems. The effort expended and willingness to engage in reading news media, however, is not the whole story.

While learning requires effort, effort does not guarantee learning, and the use of hypertext can have a negative effect on comprehension. Early research on hypermedia found no major differences in learning between print and hyperlinked texts⁵⁵. Later studies of comprehension of hypertext, however, suggest that linear texts are more useful

⁵² Craik, Fergus IM, and Robert S. Lockhart. "Levels of processing: A framework for memory research." *Journal of verbal learning and verbal behavior* 11, no. 6 (1972): 671-684.

⁵³ Zipf, George Kingsley. *Human Behavior and the Principle of Least Effort*. Vol. xi. Oxford, England: Addison-Wesley Press, 1949.

⁵⁴ Moos, Daniel C. "Setting the Stage for the Metacognition during Hypermedia Learning: What Motivation Constructs Matter?" 70, no. Complete (2014): 128-37.

⁵⁵ Chen & Rada 1996, Dillon & Gabbard 1998

to understanding than are non-linear texts. McEneaney⁵⁶ compared university students' understanding of a teaching handbook in print and hypertext formats, and found a significant effect of presentation, wherein readers who viewed the material in hypertext scored lower on the comprehension test than those who read the print book. In order to differentiate between the effects of screen or paper presentation and the effects of linearity alone, Barab Young & Wang⁵⁷ looked specifically at linearity in computer based texts, and found a similar result for learning about geography. When comparing the linearity of hypertexts themselves, an increased number of in-text links seems to lead to less understanding⁵⁸ and compared to networked hypertexts, hierarchical hypertexts tend to lead to higher scores on comprehension tests⁵⁹, perhaps due to their more coherent and curated structure.

The knowledge of the participant is a major mediating factor in studies of hypertext comprehension. Some studies have indicated that participants with high prior knowledge show no effect of linear versus non-linear presentation while learners with low prior knowledge show less comprehension with a non-linear presentation than a linear one⁶⁰. This suggests that high knowledge learners are able to counter-act the increased difficulty of reading a non-linear text through their previous knowledge, leading to no difference in comprehension when it is later tested.

⁵⁶ Barab, Sasha A., Michael F. Young, and JianJuan Wang. "The Effects of Navigational and Generative Activities in Hypertext Learning on Problem Solving and Comprehension." *International Journal of Instructional Media* 26, no. 3 (1999): 283–309.

⁵⁷ Ibid.

⁵⁸ Zhu, Erping. "Hypermedia Interface Design: The Effects of Number of Links and Granularity of Nodes." *Journal of Educational Multimedia and Hypermedia* 8 (1999).

⁵⁹ Amadiou, Franck, André Tricot, and Claudette Mariné. "Interaction between Prior Knowledge and Concept-Map Structure on Hypertext Comprehension, Coherence of Reading Orders and Disorientation." *Interacting with Computers* 22, no. 2 (March 2010): 88–97.
doi:<http://dx.doi.org/10.1016/j.intcom.2009.07.001>.

⁶⁰ Hailey, David E., and Christine Hailey. "Hypermedia, Multimedia, and Reader Cognition: An Empirical Study." *Technical Communication: Journal of the Society for Technical Communication* 45, no. 3 (1998): 330–42.

Others have found that learners with high prior knowledge can be positively affected by a less coherent text. It has generally been accepted that more coherent texts are easier to understand, but research has shown that when high knowledge readers work to understand texts that lack coherency, they have a better understanding of that information than other high knowledge readers who read a coherent version of the text⁶¹. This suggests that the increased effort in integrating information in non-linear texts⁶² may actually lead to better understanding in high knowledge participants.

The possibility for hypertext to enhance learning (again, when the learners are already relatively familiar with the subject matter) only occurs, or perhaps more accurately is only testable, when the learning occurs at a more complex level. Shapiro⁶³ found that participants in an unstructured learning condition outscored participants in a structured learning condition when their ability to write an essay was considered, rather than simply testing their information comprehension. Essay writing requires critical analysis and judgement making, unlike testing, for example, geographical knowledge⁶⁴. It seems then, that integrating information learned from network hypertext systems may promote complex analysis. However, the ability of a reader to learn from hypertext is dependent not only on his or her prior knowledge, but also on their willingness to put the necessary effort into understanding the text.

This provides an understanding of how reading hypertext could affect learning and education. In their 2014 summary of hypertext and learning, Amadiou et al. conclude that:

⁶¹ McNamara, Danielle S. "Are Good Texts Always Better? Interactions of Text Coherence, Background Knowledge, and Levels of Understanding in Learning From Text" 14, no. 1 (March 1, 1996): 1–43.

⁶² Madrid. "The Effects of the Number of Links and Navigation Support on Cognitive Load and Learning with Hypertext: The Mediating Role of Reading Order."

⁶³ Shapiro, Amy M. "Promoting Active Learning: The Role of System Structure in Learning from Hypertext." *Hum.-Comput. Interact.* 13, no. 1 (March 1998): 1–35. doi:[10.1207/s15327051hci1301_1](https://doi.org/10.1207/s15327051hci1301_1).

⁶⁴ Barab Young & Wang. "The Effects of Navigational and Generative Activities in Hypertext Learning on Problem Solving and Comprehension."

Comprehension and learning from hypertexts requires relational processes between pieces of information consisting of establishing semantic connections between the information parts. If learners have a high level of domain background knowledge, they are able to cope with these semantic elaborations and can even benefit from coherence gaps imposed by hypertexts by triggering deep inferential activity⁶⁵.

To put this in slightly more clear language, Amadiou et al. suggest that when learning from hypertext, readers must think about the relationship between the pieces of information they learn, and that this means really understanding that information. If the reader is capable of really understanding this material, then this can help them, since they have to really consider to the information they read—but if they can't do this, they will have a lot of trouble understanding that material.

Amadiou et al.⁶⁶ suggest guiding readers to think about the relationship between different articles or nodes in a hypertext to promote the integration of material they learn. To provide this guidance, however, either an external actor such as a teacher must be there, or the hypertext must be carefully created in order to promote specific connections, forming hierarchical, rather than network, hypertext. There are two issues with this. Firstly, it requires a curated collection of information, which is time consuming work on the part of the creator. Secondly, if the specific connections that are being formed between information are promoted by the creator, the document which the reader creates for themselves is not independent, active and self-determined. This means that the learning that occurs is not governed by the learner, and that hypertext isn't really functioning as a place for disruption on power dynamics—an issue that becomes more apparent when looked at in the context of news and opinion formation, which has far clearer political power dynamics, and where there is unlikely to be an external motivating force.

⁶⁵ Amadiou, F. "How May Multimedia and Hypertext Documents Support Deep Processing for Learning?," *Psychologie française*. January 1, 2015.

⁶⁶ Ibid.

Empirical research from psychology shows that reading hypertext is different from reading non-linear text. Landow argues that readers of hypertext are free to control their own reading process. Empirical research suggests that there is a possibility for readers of hypertext to make connections themselves, and not be as influenced by the choices and connections made by mass media. However, the same research indicates that, for readers without prior knowledge, this will not occur, and many people still need the support of the content creator—which once again places the power of information in that creator’s hands, and doesn’t disrupt the power dynamics of news creators discusses in the “Understanding the News” section. However, all the psychological research looked at learning academic information and comprehension here—which is different than news media and opinion formation.

Unlike academic materials, which are meant to teach the reader a specific point, news media is meant to describe, often as objectively as possible, an event or occurrence in public life. Readers must try to understand the often controversial reasons for and consequences of these events, and there is typically more than one interpretation of a news story. If the news is meant to form a part of a democratic system that requires not only understanding but action, the ability of readers to not only understand news media, but to make inferences and judgements based on that information, is paramount. The effects of reading hypertext, therefore, must also be considered in the context of opinion formation and change.

2.5 Opinion Formation and Change

The focus of this study is on how people interact with news hypertext on an individual level, and thus requires a focus specifically on opinion formation and change in individuals. A great deal of research has been done on the conditions of public opinion and attitude change in media and communication studies, but most this has been on mass communication and mass opinion. Psychological research on opinion formation focuses on individual changes, making it useful for this study. According to psychology, the

formation of opinions or attitudes is based on both cognitive and emotional responses to events or information⁶⁷.

In the context of navigating online materials, two things are relevant to opinion formation—what people see, and what they pay attention to. The biggest potential change in terms of opinion formation with hypertext is what people choose to see, or engage with. There is a difference between passively viewing information that is presented to you and really engaging with material. Rather than having information curated by the mass media and presented to the reader⁶⁸, the reader of hyperlinked information could follow their own interests and create their own opinions⁶⁹. Humans are prone to confirmation bias⁷⁰, which refers to the tendency of individuals to seek out, pay attention to, and put more emphasis on information that supports ideas they already believe to be true. In the case of unstructured information such as networked hypertext, confirmation bias might mean that individuals will be more likely to follow pathways which reinforce already existing beliefs. This would mean not only that participants would not necessarily *engage* with arguments counter to their own opinions – it also implies that they might choose not to *see* them at all.

How individuals evaluate the information they see is also important. One important psychological theory in opinion formation research is the Elaboration Likelihood Model⁷¹. The ELM is based in major part on the fact that it would be far too much effort

⁶⁷ Crano, William D., and Antonis Gardikiotis. "Attitude Formation and Change." In *International Encyclopedia of the Social & Behavioral Sciences (Second Edition)*, edited by James D. Wright, 169–74. Oxford: Elsevier, 2015

⁶⁸ Herman, Edward S., and Noam Chomsky. *Manufacturing Consent: The Political Economy of the Mass Media*.

⁶⁹ Landow. *Hypertext 3.0*.

⁷⁰ Nickerson, Raymond S. "Confirmation Bias: A Ubiquitous Phenomenon in Many Guises." *Review of General Psychology* 2, no. 2 (1998): 175–220.

⁷¹ Petty, Richard E., and John T. Cacioppo. *Communication and Persuasion: Central and Peripheral Routes to Attitude Change*. Springer Series in Social Psychology. New York: Springer-Verlag, 1986.

to logically reason through every argument presented⁷², and that individuals must choose what information they will pay attention to and evaluate—in other words, elaborate on. The attention of the individual to the information is what determines whether elaboration occurs.

Elaboration is the process whereby people recognize, critique, and logically analyze attempts at persuasion, which is the act wherein an outside agent attempts to form or change a person's opinion. Elaboration can occur by forming counterarguments and comparing them to presented arguments, looking for logical fallacies in the arguments, and comparing arguments to relevant events or information they already know. Whether an argument actually persuades, however, depends on the individual's prior knowledge, opinions and values⁷³. Different sources, arguments, rhetorical devices etc. will not be equally persuasive to all individuals, and people are more likely to elaborate on information that is relevant or interesting to them⁷⁴. Individuals should also be able to elaborate on information via their prior knowledge—for example, counterarguments to presented information cannot be formed without knowledge to build those counterarguments on.

As a whole, the ELM suggests that persuasion can occur through either the argument, or by peripheral cues that are not necessarily related to the argument itself. These peripheral cues are things such how much the reader likes or dislikes the presentation, the person making the argument, or even their mood⁷⁵. This means that persuasion can occur via one of two routes—the central route, with elaboration, or the peripheral route, without elaboration. The central route is based on the message argument and requires active consideration by the reader, and the peripheral route opinion formation is not as active.

⁷² Petty & Cacioppo. *Communication and Persuasion: Central and Peripheral Routes to Attitude Change*.

⁷³ Ibid.

⁷⁴ Ibid.

⁷⁵ Ibid.

Opinions formed via the central route are more logically reasoned and thus more stable and resistant to change than opinions formed in the peripheral route⁷⁶.

Since studies have shown that reading hypertext requires effort, it is relevant to consider how difficult texts affect opinion formation. Counter-argumentation requires the listener to be able to spare attention to come up with other points and arguments surrounding the position being argued⁷⁷, which suggests that difficult texts might be more persuasive, since the reader may have to focus on simply figuring out what the argument is saying, and thus have less ability to critique its logical faults. Increased difficulty can also be frustrating however, and distracting from the content. This causes readers to form negative attitudes towards the material in the peripheral route⁷⁸. However, the fact that increased effort in reading hypertext seems to come from integrating information from disparate sources indicates that the material itself was being thought about, which suggests that, unless the reader does not engage at all with the material, or the navigation is too difficult and the reader becomes disoriented, the increased effort that characterizes hypertext should also promote central route processing, although it may interfere with counter-argumentation.

Opinion formation as a whole is a complex process which is often specific to the individual involved. However, the Elaboration Likelihood Model helps to explore some of the ways in which opinion formation functions. Focusing on the possibility of elaboration and understanding how opinion formation is affected by elaboration provides an understanding of how opinion formation in general tends to function while also leaving space for the possibility of individual differences in interest, prior knowledge and values. Overall, the ELM provides a theoretical framework for considering opinion

⁷⁶ Ibid.

⁷⁷ Gilbert, Daniel T., Brett W. Pelham, and Douglas S. Krull. "On Cognitive Busyness: When Person Perceivers Meet Persons Perceived." *Journal of Personality and Social Psychology* 54, no. 5 (1988): 733–40.

⁷⁸ Petty and Cacioppo. *Communication and Persuasion: Central and Peripheral Routes to Attitude Change*.

formation and change which can be applied to hypertext research in order to guide consideration of how opinion formation and hypertext might function.

2.6 Hypertext and Opinion Formation: Some Possibilities

From the research discussed above, it is clear that reading hypertext has an effect on understanding, and that understanding of material is related to how people form opinions. In the context of reading news information in an online hypertext environment, research has shown that reading network hypertext requires more effort than reading linear text. This can promote either greater comprehension and independent thinking, or disorientation, depending on the difficulty of the text and the abilities of the reader. In terms of opinion formation, research has shown that effort promotes consideration of presented material in a logical manner, but that it can also distract from the message itself. Comparing research on hypertext navigation and opinion formation, as well as looking at some of the (somewhat limited) research which does compare the two will provide an introduction to possibilities of how hypertext navigation might affect opinion formation.

Hypertext may allow people to follow their own interests by clicking links, and this should also promote central route processing, since people are more likely to pay attention to information which they are interested in⁷⁹. However, Song's⁸⁰ Theory of the Elaboration Likelihood Model of Interactive Media suggests that while interactive media will increase the control of the reader, increasing the likelihood of elaboration, it will also increase distraction, which will simultaneously decrease the likelihood of elaboration. This, he argues, will create a threshold effect, whereby interactivity promotes elaboration up to a point at which it becomes too much, and leads to decreased elaboration. This

⁷⁹ Petty and Cacioppo. *Communication and Persuasion: Central and Peripheral Routes to Attitude Change*.

⁸⁰ Song, Indeok. "Interactivity and Political Attitude Formation: The Elaboration Likelihood Model of Interactive Media (ELMIM)." Ph.D., Indiana University, 2008.

theory was supported by his research, which showed that low and medium levels of interactivity seemed to increase elaboration more than high interactivity. This is consistent with findings of reading hypertext in general, which suggest that the increased effort necessary to read hypertext promotes comprehension, independent thinking, and judgement making until it becomes too difficult for the participant, at which point it leads to disorientation and confusion. However, if readers are able to understand and engage with the material, they should also be engaging in elaboration.

In many cases of reading news media, it is likely that many people have previously existing attitudes or values which will affect their opinion formation, making it difficult to predict how individuals will react to persuasive arguments. For those who do not have a previously existing opinion, however, research has shown that participants are more likely to view the final argument they hear as more persuasive than earlier arguments⁸¹. Perceived interactivity in online media also increases favourable responses to arguments⁸². When the reader is in control of his or her navigation choices, each individual's chosen pathway through the material may affect what information they find persuasive. It is likely that participants' opinion is shaping their pathway, but, given that the final argument viewed tends to be more persuasive than previously viewed arguments, the pathway might also be shaping readers' opinions.

In order to investigate how navigation might interact with attitudes, Choi and Lee⁸³ asked participants to read six articles about the Korea-US Free trade agreement. They measured participants' attitudes before and after reading the articles, and looked at whether participants chose to read articles which were consistent with their pre-test attitudes. This was supported, as participants tended to read articles which were consistent with their attitudes before they began reading. In general, all participants were more likely to click

⁸¹ Crano, William D. "Primacy versus Recency in Retention of Information and Opinion Change." *Journal of Social Psychology - J SOC PSYCHOL* 101, no. 1 (1977): 87-96.

⁸² Song.

⁸³ Choi, Yun Jung, and Jong Hyuk Lee. "Cross-Cutting Effects of Hypertext Navigation on the Convergence of Attitudes." *Mass Communication & Society* 16, no. 3 (May 2013): 369-90.

on articles which were pro-trade agreement at the beginning, but returned to their attitudes over time, so that those who were at first pro-trade agreement remained with pro-trade articles, while those who were neutral or against the trade agreement switched to reading anti-trade articles as the testing went on. Some participants read selectively, supporting their own attitudes, but others read a more balanced mix of articles from both sides of the debate, although more participants on both the pro- and anti- side read a selective mix of articles than a balanced one. This indicates that, when navigating through hypertext, people are more likely to choose to read articles or view information that is consistent with their previously existing beliefs.

Reading information does not necessarily mean agreeing with it. One of the most interesting findings from Choi and Lee⁸⁴'s study was that all participants, regardless of what their attitude was when they started the study, had a more neutral opinion at the end of the study than when they started. This effect held independent of whether they read a selective or balanced mix of articles, though the change was larger for those who read a balanced set of articles. After reading the articles, those who supported the trade agreement still supported it, but less strongly, while the same effect was seen for those who opposed it. However, it is unclear whether this finding was due to the navigational aspect of the reading, or simply occurred due to reading articles about the topic.

It is possible that simply thinking more about the topic, even without reading articles with opposite points of view, made people more aware of the complexities of it. For example, participants may have engaged in elaboration or counter argumentation even to material they agreed with. This could lead to the movement towards a neutral view in all participants which Choi and Lee⁸⁵ noted. However, understanding how the process of reading information—that is, how people pay attention to, understand, and critique what they read in a navigational context should be investigated further. This will help to understand findings which seem counter intuitive.

⁸⁴ Ibid.

⁸⁵ Ibid.

There are several ways in which hypertext reading and opinion formation might interact. The increased effort, if it occurs, should lead to both increased understanding and increased likelihood of central route processing. People's attitudes and values will affect what information they choose to engage with, but it is not guaranteed that people will only choose to view information which they agree with. Finally, viewing information does not necessarily mean agreeing with it, and it is necessary to understand what is actually occurring during the reading process in order to understand how attitudes are formed.

2.7 Conclusion(s)

This chapter attempts to summarize many broad concerns about the role of online news media, hypertext, and opinion formation order to motivate an investigation into how individuals interact with specific news media hypertexts. This provides a context for issues of power and control in news media, and the political and economic issues surrounding that, as well as how hypertext and digital media interact with these issues. However, reading and understanding the news requires both a producer and a reader, and this research, while essential for understanding context, does not focus on the potential role of the reader.

Hypertext itself provides a space in which issues of reader and writer control can be investigated, since the work created by a writer must then be navigated through by a reader, who can choose what to access. Hypertext theory articulated some of these issues, although the work was broadly techno-optimist and overstated. However, despite the issues that occur within hypertext studies, this research still provides possibilities that should be considered. In particular, looking at the way in which readers create their own document, and the possibility that hypertext navigation allows readers to follow their own interests and form their own conclusions is worth investigating.

Psychological studies, on the other hand, have investigated how individuals read hypertext. This work has demonstrated that reading hypertext is more difficult than reading linear text, most likely due to the need to integrate information learned from

different sources together. This can be a good thing, when the reader is motivated and capable of doing so, leading to better comprehension and independent thought, since she is forming the connections themselves. However, if the reader is not motivated or unable to understand the material, they will not learn, and may become disoriented and confused. The effects of hypertext on comprehension are therefore mediated by characteristics of each individual reader.

Opinion formation is also very much governed by the characteristics of each individual, but the ELM provides a model for considering how opinion formation and hypertext might work. This model states that if readers are motivated and able to engage with the material, they will engage with persuasion attempts at the level of the argument, thinking about what is being said and offering counterpoints. If readers are not motivated or cannot engage with the material, their opinion will be formed through emotional responses to the message, rather than critically engaging with the material. When applied to reading hypertext, this means that the same readers who read in depth and engage with the material are likely to also critically examine the arguments presented.

An empirical investigation of how readers navigate through online hypertext and form, change or reinforce their opinions will provide a further understanding of how the results of the literature described above might interact. In this study the focus is on how readers interact with this material in a best case scenario, where the links move between various points of the view and the collections of articles is meant to be balanced. This will provide information about what actually *can* happen when people navigate through hyperlinked materials, and remembering the difficulties and problems which prevent this best case scenario from occurring, such as the political and economic circumstances of news production and the characteristics of the reader will contextualize and inform the findings of this best case investigation. The following chapter explores the specific research questions and methodological approaches that were taken in order to investigate these issues.

3 Methodological Approaches

This research is attempting to answer two main questions. The first question asks **how do young people navigate through hyperlinked online news media?** The second question asks **how might this affect opinion formation, change and reinforcement?** According to the discussion in the previous chapter, navigation through non-linear text is more difficult than reading linear text, but it can also promote integration of information, which leads to greater understanding, and might also allow people to form or follow their own opinions. In order to respond to these two main questions, it is necessary to follow the process of reading online news as it occurs, which meant gathering participants and recording how they go through the process of navigating through online news, while asking specifically about their opinions on the topic before and after that process.

I investigated how 11 young people between the ages of 18-24 navigated through various news articles, through a combination of think-aloud protocols, observation, and semi-structured interviews. Think-aloud protocols ask participants to self-report their thoughts (literally thinking aloud) while performing a task, which in this case was navigating through several online news articles. After completing the think-aloud protocol, participants were asked to elaborate on their opinion and the reading task in a semi structured interview, where the researcher asked questions to clarify, refine or elaborate the participants' experience. Combined, the think-aloud data, observation of how the participants performed the task, and the semi-structured interview provided qualitative data about their opinions before and after the task, and tracked how they navigated through the articles. In total, data was gathered through a brief news consumption survey, a think-aloud protocol, a semi-structured interview, and participant observation.

Gathering qualitative data provided rich and detailed step by step information about students' opinions and navigation of online news, since the data gathered is from each part of the reading process, and thus should capture changes and reactions as they occur. The think-aloud protocol and the semi-structured interview were then transcribed and coded for key themes and approaches taken by the participants, following the guidelines

set out by Charmaz in her guide to conducting grounded theory studies⁸⁶. Although the organization of this research project did not traditionally follow the guiding principles of guiding theory during data collection, the use of memo-writing, line-by-line analysis and thematic clustering was useful in organizing the data gathered. As a whole, this allowed for further exploration of the two questions laid out at the beginning of the study: **How do young people navigate through hyperlinked online news? And how might this affect opinion formation, change and reinforcement?**

3.1 Theory of Methods and Key Themes

In order to deal with these questions, I attempted to get a picture of what was happening as people read through online news articles in a “best-case scenario”. This best-case scenario attempts to look at what actually happens when readers interact with online news articles that are perfectly balanced between opinions, when those readers are engaged, and when they are familiar with the tools of navigating through online hypertext. This allowed me to focus on the role of the reader within the materials *when everything is working*, rather than just looking for problems with participants’ understanding under less than optimal conditions.

Focusing on a best-case scenario meant that the data gathered is focused not on fixing problems, but rather on understanding the process. I believe that in order to have a complete picture of any particular process, it is crucial to attempt to understand how things function when they are going well, not just when there is a problem. This meant focusing on the reader’s interaction with the articles via a careful approach that follows each participant step-by-step through the material, and allows them to articulate their own impressions and responses to material. This generated qualitative data about the process and allowed for discovery of new themes and concepts through the data collection process.

⁸⁶ Charmaz, Kathy. *Constructing Grounded Theory*. 2nd ed. Introducing Qualitative Methods. London ; Thousand Oaks, Calif: Sage, 2014.

Qualitative research is best used to explore a problem⁸⁷ or to “explain the mechanisms or linkages in causal theories or models”⁸⁸. In this case, since the theoretical background discussed the presence of several key theories when reading hypertext—specifically disorientation, integration of information, and navigating to fit one’s own interests—gathering qualitative data about this process will explore connections between these ideas and allow participants to offer their own explanations and narratives about how they read through online news. This concept, that the way in which individuals describe their own experiences is important⁸⁹, is one of the key concepts that supports qualitative research. In this study, it acts as a counter-balance to the charge leveled against Landow⁹⁰ in chapter one that his research did not take into account the experiences of others than himself, and it also allows for an understanding of how things like disorientation and integrating information occur.

To this end, three separate qualitative processes were used in this study. The first was think-aloud protocols, which asked that participants report their thoughts aloud while reading. The second was observation of the participants and what they chose to read, and how they read, during that reading process. Finally, the study used semi-structured interviews, where participants were asked about their reading process and their opinions of news media. This provided data before, during, and after reading news articles. It also provided multiple ways of getting at the same object or piece of data through triangulation, which argues that different methods “reveal slightly different facets of the same social and symbolic reality”⁹¹, and that combining methods provides a stronger understanding of that reality. Interviewing multiple people allows for data about each one’s subjective experience, as well as similarities that were present in multiple participants, and multiple methods allowed for similarities to emerge in what participants

⁸⁷ Ibid. 45

⁸⁸ Ibid. 48

⁸⁹ Seidman, Irving. *Interviewing as Qualitative Research: A Guide for Researchers in Education and the Social Sciences*. 3rd ed. New York: Teachers College Press, 2006. Print. 7

⁹⁰ Landow, George. *Hypertext 3.0*.

⁹¹ Berg, Bruce L. *Qualitative Research Methods for the Social Sciences*. 1989. 6th ed, 2007. 4.

did (participant observation) what they thought (think-aloud protocol) and how they explained what they did and thought (semi-structured interview).

The first major methodological process used in this study was a think-aloud protocol. Think-aloud protocols provide information about cognitive processes while they are occurring, meaning that the data cannot be altered by memory or changes in attitude after the task. This approach is valuable in opinion formation, since opinions may change and people tend not to remember or report instances when they disagreed with opinions or attitudes that they currently hold in order to reduce cognitive dissonance⁹². Think-aloud protocols also were useful in identifying specific instances of counter argumentation, which Petty and Caciappo note as one of the key ways in which people respond to and deal with persuasive material when forming or reinforcing an opinion⁹³. Think-aloud protocols were valuable in this particular study because they provided a play-by-play of participants' navigational choices, and how each participant responded to the persuasive materials in the network hypertext.

As with any research method, however, there are some drawbacks to think-aloud protocols. The data gathered is almost always incomplete and telegraphic, due to the speed at which participants speak, the possibility that they do not report all thought processes, and the fact that thought processes cannot be completely rendered in language⁹⁴. In order to understand this incomplete data, it was supplemented by both observation of what the participant was doing during the study, and retrospective questioning in the semi-structured interview. This allowed the researcher to receive further clarification or more information from the participant without interrupting the reading process. In order to note particular moments that needed to be brought up in the interview, the researcher sat beside the participant, making note of what they were

⁹² Cognitive Dissonance refers to the discomfort that occurs when someone holds multiple beliefs or attitudes that are in contrast with each other. See Festinger, Leon. *A Theory of Cognitive Dissonance*. Stanford University Press, 1962, for more details.

⁹³ Petty and Caciappo. *Communication and Persuasion*.

⁹⁴ Charters, Elizabeth. 2010. The use of think-aloud methods in qualitative research an introduction to think-aloud methods. *Brock Education : A Journal of Educational Research and Practice* 12 (2).

looking at, at the time to relate it to the later transcription, and any choices or comments that required further questioning.

While participants read the material in front of them, their behaviour was observed. Specifically, the amount of time participants spent reading articles—slowly reading through all of them, skimming, starting and stopping—and how they chose to navigate through the hyperlinks—in the middle of articles, only after completing articles or by opening all links in multiple tabs—was noted. In participant observation what participants do can be described, but how or why these things occur cannot.⁹⁵ For this reason, the participant observation portion of the study was intended primarily to provide possible questions for the later semi-structured interview, and to support the data gathered during the think-aloud protocol. It also provided a source of data if a participant struggled with articulating their thoughts and responses during the think-aloud portion of the study.

Finally, the semi-structured interview portion of the study allowed for a fuller exploration of the participants' reading process through guiding questions from the researcher. It helped to fill in gaps in the data from the think-aloud protocol and observation and gathered information about each participant's opinion of the Canadian oil sands after the learning condition by asking them what they think should be done with the oil sands in the future, and why. This question also helped to assess what the participant understood from the readings, and what they remembered. In conjunction with the think-aloud protocol and participant observation, it provided an in-depth qualitative investigation of interaction with network structures of news media.

Semi-structured interviews generate large amounts of detailed and rich data from participants. Interviews are also able to provide historical or background information

⁹⁵ Kawulich, Barbara B. "Participant Observation as a Data Collection Method." *Forum Qualitative Sozialforschung / Forum: Qualitative Social Research* 6, no. 2 (May 31, 2005). <http://www.qualitative-research.net/index.php/fqs/article/view/466>.

about an event or experience⁹⁶ that might not be clear from simple observation—in this case, often people’s reasons for holding specific opinions, which were linked to their experiences or values. These interviews also allowed participants to explain why they think they followed up on specific ideas or interests, as well as explaining what they might do with these news stories in different situations. This provided subjective accounts of the participants’ experiences of reading the news and their opinions: specifically, how they do it, and what they think about it.

The combination of methods chosen for this study were intended to capture a multifaceted picture of the reading process through the triangulation of the think-aloud protocol, participant observation, and the semi-structured interview. However, despite the combined use of several different methods, there are still some limitations. The presence of the researcher and the recording device may affect participants’ responses—particularly in terms of their opinions, which may be altered to be more socially acceptable. Not all participants were equally comfortable articulating their ideas during the think-aloud protocol or the interviews. Finally, all methods used here provided qualitative data, which is not generalizable. When analysing the data, it is important to be aware of limitations of the methodologies chosen, and consider them as a part of the analysis. Despite these limitations, however, the combination of methodologies used in this study provides rich information about how people interact with news media, and why they think they make the choices about navigation and opinion formation that they do.

3.2 Data Collection

3.2.1 Participants

This study consisted of 11 participants, five of which were male, and six of whom were female. All participants were between the ages of 18-24. This is the age group who report

⁹⁶ Creswell, John W., ed. *Qualitative Inquiry and Research Design: Choosing Among Five Approaches*. 2 edition. Thousand Oaks: Sage Publications, 2006.

regularly using digital media as a news source⁹⁷ and thus were familiar with navigating through web based hyperlinks. This meant that their actions within the study were more likely to mimic how they navigated news information outside of the lab, since it is how they frequently viewed news in general. As digital natives⁹⁸, they were not learning how to navigate hypertext as a whole within the study, and what they reported should not be due to lack of familiarity with the structure of hypertext, but with aspects of the form itself. Participants were no longer gathered once saturation had been reached: when no new information was provided by continuing the interviews.

Participants were gathered through convenience sampling by posters placed on the campus of an Ontario university, and thus were predominantly undergraduate university students, although this was not a requirement for participation. The use of convenience sampling in this study means that it is not a representative study, and it was not intended to be. This study is exploratory, and was not intended to provide hard truths about how individuals navigate through news media and opinions, but rather to identify new possibilities for consideration and exploration. Furthermore, convenience sampling is both cost and time effective, and given the financial and temporal constraints of a Master's thesis, a useful sampling method.

Finally, convenience sampling was ideal for studying a sample of a specific population⁹⁹—in this case, young (18-24) university students. This specific group of participants is ideal for looking at how young people read news in a best case scenario, since young university students will not only be comfortable within the digital format, but be comfortable with learning new information, since it is a part of their day-to-day lives. This means that they should be able to deal well with the issues of disorientation and information integration, which will help to gather information about how disorientation is avoided and information integration occurs in participants. Since they are university

⁹⁷ -- "In Changing News Landscape" 2012.

⁹⁸ Prensky, Marc. "Digital natives, digital immigrants part 1." *On the horizon* 9, no. 5 (2001): 1-6.

⁹⁹ Berg, Bruce L. *Qualitative Research Methods for the Social Sciences*.

students, they will also be a highly educated population, which will mean they are more likely to have prior knowledge about the topic and be able to articulate and explain their reasoning about the decisions they make.

3.2.2 Materials

Study materials consisted of a demographics and news use questionnaire, think-aloud protocol instructions, and guiding questions for the semi-structured interview, all of which can be found in Appendix D. Materials also included a walled garden of news about the Canadian Oil Sands, and Canadian and American pipelines. The articles that made up the walled garden were gathered from both English Canadian and American news sources. In total, twelve articles were used. Appendix A provides an annotated list of these articles. When possible, hyperlinks between articles were retained from their original format, but were supplemented with other links added by the researcher to complete the walled garden.

During the think-aloud portion of the study, participants were presented with a ‘walled garden’ of collected articles on the subject of the Canadian Oil Sands and the possibility of building several pipelines to transport that oil so that it can be refined for later use. A walled garden consists of a complete online space within which the participant can navigate without leaving, created by the researcher. While the creation of a walled garden limited external validity by carefully curating the space in which the participants navigated, it allowed me to narrow the focus to investigate specific concepts or tasks. In this case, a walled garden made primarily of opinion articles and related column articles provided the opportunity to see how readers navigate through persuasive articles in order to form their own opinion about a controversial topic, and how their navigation might affect their opinions. The topic of the Canadian Oil Sands was chosen for its divisive nature, as well as the number of issues it embodies, including job loss, the future of the Canadian economy, environmental concerns, and First Nations rights. This made it a topical and complex issue which provided ample material for participants to read and respond to.

The formatting of all articles was standardized in order to make them easier to read, but photographs were retained, and the logo of the original news sources was also included in order to clarify the source for the reader, as well as the author's name. An example of an article as seen by participants can be seen in **Figure 1**. The linking structure was carefully curated in order to create a hypertext structure that allowed readers to access, and thus follow up on, what they found interesting. A walled garden which was skewed to have more articles that are anti-pipeline and tar sands, rather than pro, might have forced readers into a particular perspective due to ease of access. In order to avoid this, there were an equal number of pro pipeline and oil sands pieces, and the links out of each article linked to both articles which agree with the position held in the article, and articles which disagree. This meant that the participants always had access to a dissenting view.

Why BC First Nations oppose the Northern Gateway Pipeline

the star.com



Art Sterritt is the executive director of Coastal First Nations, an alliance of aboriginal groups in British Columbia. Though living about 1,200 kilometres west of the [oilsands](#), Sterritt and other native leaders in the area have developed a keen interest in the production of thick black bitumen.

That's because oilsands developers and Enbridge are proposing the \$8-billion Northern Gateway pipeline be built between northern Alberta and the B.C. coast. It would move 525,000 barrels a day of diluted bitumen to Kitimat. There, it would be loaded onto tankers that would have to navigate chains of islands and narrow channels before reaching open sea en route to Asia.

The coastal First Nations in the area, known as the Great Bear Rainforest, make up the majority of the population, and they don't want the pipeline. They particularly don't want tankers full of diluted bitumen — which is much thicker than crude oil — in waters where salmon abound in a complex ecosystem that has supported their people for centuries.

Figure 1: Example of an Article in the Walled Garden

Six of the twelve articles used were pro-oil sands, and six were anti-oil sands. The total word count of the walled garden was 6924 words: the total word count of pro articles was

3718, and the total word count of anti articles was 3206. The number of out-links¹⁰⁰ in all articles was between two and five, as were the number of in-links. There were 44 links in total, and these links were balanced so that 11 links were anti to anti, 11 were anti to pro, 11 were pro to anti, and 11 were pro to pro. Thus, the links within the walled garden were completely balanced, and access to both pro and anti-articles was equally accessible. This ensured that the walled garden itself was not biased to lead participants towards either pro or anti articles.

All articles were chosen from Canadian or American news sources. Any articles which were published about the oil sands or pipelines between within the last 5 years (since Nov 2011) were eligible, although the focus was primarily on articles published more recently due to their relevancy. Articles that were chosen for the walled garden offered a clear perspective so that they could be sorted in to pro or anti categories, and were relatively short, so that there was not a significant difference in word count between the pro and anti articles. Articles were also chosen to provide a variety of topics (environmental concerns, economic concerns, and first national rights) as well as geographical spread throughout Canada and the United States. The two articles chosen as starting points were chosen for their summary of key issues of each side of the debate, and their similar length and style.

Finally, a complete list of the articles was available in a footer on each page of the walled garden save the starting points. While participants were encouraged to use in-text links when possible, these footer links became necessary when pretesting indicated that participants easily became lost and disoriented to the point that not enough data could be gathered during the think-aloud protocol. The links at the bottom allowed the participant to restart if necessary, so that data gathering could continue. However, disorientation was still indicated by the think-aloud protocol report, and could be recorded and noted.

¹⁰⁰ Out-links refers to links within an article that link out to another article. In-links, in contrast, refers to the number of ways to access the article from other articles within the walled garden.

The total number of articles was greater than each participant was likely to read, since the reading condition lasted only 25 minutes in order to standardize the amount of time each participant read. This size also mimicked news consumption in general since the amount of news produced is too large for any one person to read all of it. Participants were informed that they should read until they are able to explain what they think should be done about the oil sands in the future and why, or until stopped when time had elapsed.

In order to look specifically at the navigational aspect, some participants began with an article that is pro oil sands¹⁰¹ and others with an article which is anti-oil sands¹⁰² in order to control for possible effects of presentation order. While this approach could be quasi-experimental, the purpose of it within this research is to balance the effects of viewing order on participants' resulting pathway in the event that participants have no knowledge about or attitude towards the issue of the oil sands at all. Even with previous knowledge or opinions, however, it is possible that the first argument each participant sees is a major component of what they choose to see after, and could affect how they respond to, and navigate within, further articles. If this is the case, alternating the starting point between participants would control for these effects of presentation order. All navigation from these initial starting points, however, was chosen by the participant. In order to ensure that possibilities for navigation after this initial article were the same, both of these two beginning articles were the only articles which did not contain in-text links. Instead, the same four articles (two pro, two anti) were linked at the bottom of the page of each starting point. This ensured that each starting condition had the same links out of the article, and that they were presented in exactly the same way.

The rest of the articles were linked together by in-text hyperlinks, as well as by "related articles" at the bottom of each page, in order to replicate the way in which articles are linked together in original postings, since most sites offer a "related articles" section in each article, usually located either at the end of the article (Financial Post, The Star) or in

¹⁰¹ "Canadian Oil patches may be out of the game if new pipelines not built"

¹⁰² "Tailing Ponds Alberta's toxic legacy"

the middle of the article (CNN). This kept the number of in text links low, since Stray¹⁰³ indicates that this is generally the case with online news sources. As well, it provides a space to include links to articles that might not naturally fit into the flow of the article to balance the number of links out of each article as equally pro-oil sands and anti-oil sands.

3.2.3 Procedure

After volunteering to participate in the study, participants were presented with the letter of information, which explained the study procedure. All participants then provided informed consent to participate in the study. They then participated in the main portion of the study which included the following steps. All study materials referenced here can be found in the Appendices.

1) Participants filled out a brief written questionnaire to gather demographic information and information relating to their general news consumption (Appendix B). This took approximately 5 minutes.

2) Participants were then asked what they knew about the oil sands and their opinion on them in a verbal interview which was audio recorded (Appendix B). This process took approximately 10 minutes.

3) Participants were asked to read through a ‘walled garden’ of articles about the oil sands, making navigational choices about what to read next. All participants were randomly presented with one of two possible starting articles, one of which was pro-oil sands, and one of which was anti-oil sands. While reading, participants were asked to voice their thoughts in response to the articles following instructions in the think-aloud protocol. Think-aloud comments were audio recorded, and participants’ navigational choices were viewed and noted by the researcher, who was sitting next to them and looking at the screen over their shoulders. Looking over the participants’ shoulder also allowed the researcher to note the time when participants switched articles in order to

¹⁰³ Stray, “Linking by the Numbers”.

ensure audio recordings were connected to the relevant article and note any questions about the participants' choices that needed to be followed up on. This data was recorded on the Pathway Map (Appendix E). The reading condition lasted 25 minutes, and participants were stopped when the time had elapsed.

4) After participants had finished reading through the walled garden, their opinion on the oil sands and what information they used to support that opinion was assessed through a semi-structured interview. At this point, the researcher also asked any questions about the participants' navigational choices or comments which were made while reading that were not fully explained by the think-aloud protocol. This process took approximately 20 minutes.

3.3 Coding and Data Analysis

Once all data had been gathered from participants, the data were transcribed and then coded and analysed for key themes. As previously mentioned, while the data gathering was not governed by grounded theory, the tools of memo-writing, line-by-line analysis and thematic clusters which are used in grounded theory, specifically in Kathy Charmaz's *Constructing Grounded Theory*, provided the guiding principles of data analysis, which allowed for theories and themes to emerge which were guided by the data itself.

However, certain key themes were previously noted in chapter one, and these themes formed thematic clusters which informed the sorting and analysis of the data, as well as the questions which were asked. These themes, and how they might be present in the data gathered, are as follows.

3.3.1 Previously Existing Themes

The first major theme indicated by the literature review was *disorientation*¹⁰⁴, as well as how participants indicated that they would deal with disorientation when it came up.

¹⁰⁴ Sandberg, Kate E. "Hypertext: Its Nature and Challenges for College Students", see page 18 in Chapter One.

Disorientation was indicated by comments expressing confusion or frustration, as well as repeatedly clicking through to articles that had already been viewed, or needing to use the general links in the footer of the walled garden rather than simply clicking through provided hyperlinks. Looking for disorientation provided an indication of how it occurred, and, more importantly, how participants dealt with it or how they would deal with it when reading news media on their own time.

The second major theme was that of *integrating information*¹⁰⁵, which Madrid et al¹⁰⁶ indicate as potentially causing the increased effort that might lead to disorientation and confusion, and which has been linked to increased learning¹⁰⁷ and a way in which readers of hypertext may be able to form their own interests or follow their own opinions¹⁰⁸. Integrating information was indicated as demonstrated by either bringing up related material that is not already present in the article being viewed during the think-aloud protocol, or by restructuring information from what participants read to prove a point in response to the post-test, which asked them to explain what they thought should be done about the oil sands in the future and why. This would mean that, rather than repeating the information as it was presented in the walled garden, participants formed connections either between the information presented in various articles, or between those articles and their previous knowledge. This will indicate that readers are engaging with the material and understanding it enough to form connections based on the content.

According to the Elaboration Likelihood Model¹⁰⁹, if participants are considering the information they see via the Central Route, they should be forming *counter arguments* to information with which they disagree. It also means that participants will be considering the arguments themselves, rather than peripheral cues, when forming their opinions.

¹⁰⁵ See page 20.

¹⁰⁶ Madrid, Ignacio R. "The Effects of the Number of Links. . ."

¹⁰⁷ Zhu, Erping. "Hypermedia Interface Design".

¹⁰⁸ Landow, George. *Hypertext 3.0*

¹⁰⁹ Petty and Cacioppo. *Communication and Persuasion: Central and Peripheral Routes to Attitude Change*.

Counter-argumentation is the third key theme indicated by previous research. It also demonstrates the difference between reading and paying attention to an article or argument, and being persuaded by it. For example, participants who viewed an equal number of articles which were for and against creating more pipelines might still offer an opinion, and counter argumentation will help to explain what they found persuasive or not persuasive. Counter argumentation was indicated in the think-aloud protocol, when participants responded to articles or ideas by disagreeing with them or arguing against them aloud.

The fourth key theme is *opinion formation*. Since previous research has suggested that the major possibility of hypertext was being able to follow one's own interests and opinions¹¹⁰, how readers form opinions and how that might relate to their navigation is a major concern of the study. Understanding how opinion formation might occur in this context means considering both what participants read, which is indicated by the pathway they take, and their think-aloud reports. It also means considering how they respond to what they read, indicated by the think-aloud data and questions. It also includes their own reports of why they hold the opinions they do.

The fifth key theme is that of *opinion reinforcement or change*. For participants who hold a certain opinion, it is likely that they will navigate through the materials based on that opinion, and that their navigation choices will be influenced by those specific choices. In particular, it seems likely that participants will spend more time with material that reinforces their own point of view, and form counter-arguments to materials that are counter to those points of view. It is also possible that participants could be persuaded by specific articles and have their opinion changed, but given the brief time of the study (twenty five minutes of reading at most) this seems unlikely. Often, opinion change is a slow process, and the materials are not meant to change peoples' previously existing opinion so much as offer them multiple perspectives and see what they choose to access.

¹¹⁰ Landow, George. *Hypertext 3.0*.

Combined, these questions consider the issues of opinion formation and navigation and provided me with a guiding framework to focus my investigation and coding of material. These themes, however, mostly focus on the presence of several different key ideas—disorientation, integrating information, what types of articles individuals read, etc. These are then combined with themes that emerged during data analysis to further understand *how* many of these key ideas exist and how they function.

3.3.2 Data Analysis

Data analysis meant comparing data that had been collected through participant observation through the over-the-shoulder observation, as well as linguistic data from the think-aloud protocol and the semi-structured interview. This meant considering each piece of data as a part of a whole for each participant, and then looking for key themes and similarities between participants. Information about the pathways that participants chose gathered by participant observation, for example, needed to be considered in the context of how participants explained their choices in the think-aloud protocol or the semi-structured interview.

In order to navigate the occasionally complex issues of coding, the method of coding used was drawn from Kathy Charmaz's *Constructing Grounded Theory*. While the way in which the data was gathered did not follow the rules of grounded theory, since the interview questions were not necessarily changed to allow for topics that arose in previous interviews, the form of data analysis that is set out in grounded theory focuses on allowing the data to drive the theory that is created, and thus was a good match for this research, where theories, while informed by the key themes set out above, should be based on the data itself.

During analysis, recordings of the think-aloud protocol and semi-structured interviews were transcribed and printed out for analysis. These transcriptions were analysed twice, as outlined by Charmaz¹¹¹. The first analysis consisted of line-by-line coding of the

¹¹¹ Charmaz, *Constructing Grounded Theory*.

interview and think-aloud protocol for each participant. The second compared themes that arose during the first round of coding between all participants, and allowed data to be organized and categorized into thematic clusters based on the themes that emerged in the first round of coding. This process was facilitated by analytic memo-writing¹¹², in which comments on the data were noted and written down. This allowed for a running history of how the data was being analysed during the entire process, and allowed for it to be re-analysed, providing some checks and balances. This data was then clustered into major themes and findings in order to be presented.

While the primary data source was the transcriptions of the think-aloud protocol and the semi-structured interview, participant observation also provided information about the pathway that the participants took, which provided information specifically about whether participants viewed information from both sides of the argument, and how they moved between them. These were thus also coded for recurring patterns in how participants navigated. Combined, the think-aloud protocols, semi-structured interviews, and observation of the pathways which the participants used when navigating provided a great deal of data for analysis.

3.4 Conclusion

This chapter provides an overview of how the data in this study was collected and analysed. It outlines the major research questions of the study, and how I have gone about attempting to answer those questions. It explains the methodological background to this study as well as the materials, participants, and the step-by-step process of collecting data. By gathering qualitative information from think-aloud protocols, semi-structured interviews, and participant observation, I was able to gather a rich portrait of how participants read through online news articles and how their navigation might affect their opinion formation. The following chapter will go on to explore the results from this investigation.

¹¹² Ibid. 72

4 Results

This chapter provides the results of the study outlined in the previous chapter. It provides a summary of some of the key themes that arose during data collection, which include disorientation, integration of information, and counter-argumentation, as well as themes which emerged during the coding process. These emergent themes dealt with how participants judged the “completeness” of what they read, how they evaluated the information that they read, and how they decided to read, or not read, specific articles. Finally, it takes a close look at how participants formed and reinforced their opinions while in the study.

4.1 News Consumption Survey Results

The demographics and news consumption questionnaire provided information about the participants' news consumption and usage, as well as how important and enjoyable they considered news information to be. Eleven people between the ages of 18-24 participated, six of whom were female and five of whom were male. When asked how often they read, watch or listen to the news, two participants reported that they rarely interacted with the news, while four reported that they sometimes read, watched or listened to the news. One reported getting the news often, two participants reported getting news every day, and a further two reported getting it multiple times per day.

In terms of how they accessed this news, participants reported gathering news from a variety of sources. The most commonly reported source was social media, such as facebook or twitter, which was reported by ten of the eleven participants. Friends and family and online news articles were each named as a source by seven participants. Six participants reported getting news from the radio, while four reported using new focused smart phone applications, and three used the television and the newspaper. Participants reported, on average, using 3.63 different sources for gathering news regularly. The maximum number of sources used by one participant was seven, and the lowest number was one (online news articles).

In general, participants believed it was important for people to regularly read the news—five stated that it was important, three believed it was “kind of important” and a further three reported that it was essential. They were, however, slightly more divided on their enjoyment of reading the news. Five participants reported that they enjoyed following the news “very much”, while six reported that they enjoyed following it “a little bit”. This suggests that while participants believed that reading the news was important, they had a slightly more complex relationship with actually following the news as an activity, since they did not always enjoy it.

These results show that those who chose to participate in this study were, in general, familiar with reading the news, and many of them used online materials to access news,

including social media and online news sites. This, combined with their youth and likely familiarity with navigating online news sources¹¹³, meant that the participants were knowledgeable participants who were practiced with reading online news articles and with reading the news in general. This background meant that participants were likely to be able to handle the difficulties of reading non-linear information and integrating it fairly well.

4.2 Pathway Behaviour

While navigating through the walled garden, all participants read between six and nine articles, accessing an average of 7.36 of 12 possible articles. Participants read a balanced mix of pro-pipeline and anti-pipeline articles. The greatest number of pro articles read was five, and the lowest was three, while all participants read either three or four anti-pipeline articles. The average number of pro pipeline articles was 3.63, while the average number of anti-pipeline articles was 3.66. There was no major tendency for participants to read on one side of the argument or the other, and since the lowest number of articles for any participant on both sides was three, all participants at least read three articles from each perspective.

There was no noticeable tendency for participants to remain on one side of the argument once they had landed there: When choosing the links to follow throughout the study, participants moved incongruently 35 times, 19 times pro to anti and 16 anti to pro and congruently 36 times (17 pro to pro and 16 anti to anti), demonstrating no particular tendency between participants for staying on, or changing, their topic. There were, however, a few specific hyperlinks that were followed by a large proportion of participants. For example, seven of the eleven participants moved between two articles from CNN on the Keystone XL pipeline. Overall, however, participants seemed to seek out a balanced combination of articles in terms of their perspective on the topic, and the data gathered from the pathway they took through the walled garden supports that.

¹¹³ Pew Research Study. "In Changing News Landscape, Even Television Is Vulnerable."

4.3 Keys to Navigation and Understanding

The first of two major questions that drove this particular research project was as follows: **How do young people navigate through hyperlinked online news?** In this context, navigation refers to how participants actually moved through the articles presented—for example, what links they chose to follow and which articles they read. However, navigation is affected not only by how participants actually click through the information presented, but by how participants understand this information. Understanding refers to how they evaluate, consider, and react to the content of the hypertext. Obviously, navigation will affect how they understand the material and their understanding will impact the navigation. The pathway data gathered through participant observation recorded how participants navigated, and the think-aloud protocol and semi-structured interview gathered data about their understanding. The analysis revealed three themes initially identified through the literature review, namely disorientation, integration of information, and counter-argumentation. Additional themes arose through the coding process: these related to how participants evaluated the information they viewed, how they chose to read specific articles, and how they followed up on information and discussed gathering enough articles. Combined, these themes provide insight into how people read through and navigate online news.

4.3.1 Disorientation

According to previous research, disorientation was a major issue for students attempting to learn from hypertext¹¹⁴. When readers became disoriented, they lost track of where they were and what information they needed. Participants in this study may have been less likely to experience disorientation because they were provided with a specific question to direct their reading,¹¹⁵ and there was a limited number of articles for them to explore. Despite these efforts, disorientation was still observed during data collection.

¹¹⁴ Sandberg.

¹¹⁵ Ibid.

This section describes the situations in which disorientation was experienced by participants, and discusses their strategies for minimizing it.

During pretesting, participants found that they became easily disoriented, since they were unable to gather a whole picture of the contents of the walled garden, and they needed to use only in-text hyperlinks to navigate. The disorientation was such that data collection was difficult, since participants became lost and frustrated. In order to deal with this, a list of all the articles within the walled garden was added to the footer of each page, which was organized by the topic of the article. These topics were “Economy and Jobs”, “Environmental Impacts” and “First Nations Rights”. All participants used hyperlinks within the text, and from this list of articles. As well, participants also made specific choices to reduce disorientation: they opened tabs in order to see the structure of the information as they read through it.

In the semi-structured interview, participants explained the reasoning behind opening tabs. Participants John¹¹⁶, Richard and James all explained that they always used tabs when reading information online, or, as John put it, got “the tabs going pretty hardcore”. In the semi-structured interview, John expanded on why he found tabs a useful method for battling disorientation:

I like to have everything in front of me, in a way, because if I don't open new tabs, and I just follow links and go through then it's kinda like moving through a hallway or something. Whereas if I am opening tabs I am getting more of a blueprint of what's actually happening. And that way also if I need to go back to something, it's still there, I don't have to move backwards. . . It's to conceptualize it, I think, spatially.

Here, John clearly explains that he finds tabs useful in order to provide a “blueprint” of information. This blueprint gives him access to multiple routes through the information, and allows him to return to information without losing his place or moving “backwards”. John suggests that reading without opening multiple tabs, or having multiple pieces of information that he can access in any order, is like moving through a hallway, where he

¹¹⁶ All names provided here are pseudonyms.

can only go forward or backwards: not what he prefers. In this way, John reacts against using only one way of accessing the information at a time, or accessing it in a linear fashion, as in his hallway metaphor. For him, the information is non-linear and he visualizes it spatially, and tabs help him create a blueprint to navigate it.

Richard also explained his use of tabs in terms of navigation, arguing that “if I click within the same tab then I know that—I wanna keep reading what I’m reading, and if I open it in the same tab, that I’ll lose where I was”. He uses tabs to allow him to explore more information without losing his place. James and Richard both also explain that tabs helped them to form a reading list of articles that they could then later go back to, which they claimed they did. Richard explains:

“I’ll be multitasking and browsing, and so it will be like, oh, I should come back to this, oh I should come back to that, and I’ll end up with, like, 87 tabs open, of just things that I want to read, it’s almost like a to-do of reading, which I find really helpful”

In this case, opening tabs isn’t explicitly to deal with disorientation as it occurs, but to prevent it. Open tabs allow participants to put aside information for later, so that they do not get lost in things that they “need to view”. Instead, they can finish reading the article they are in the midst of without losing that narrative. They explained that this was important so that the information “sinks in a little more”, as one participant, Sasha, put it. Another participant, Max, explained that he “wanted to finish the story” of an article, before moving on to another link or discussion. Completing that narrative of a specific article might help participants avoid disorientation, since they will not lose their place within the actual article or the story that each article is telling.

Tabs provided participants with a sense of where they were going, but also with knowledge of where they had been. They allowed participants to finish the article they were reading without disrupting the narrative of an individual article, and participants used them as a spatial “blueprint” of the information. Avoiding disorientation allowed participants to focus on understanding the information, and knowing what articles existed helped them decide what articles to read, and to judge the completeness of the

information that they read—all evidence of how participants understood the information discussed below.

4.3.2 The Need for Balance

Disorientation refers to how participants avoided getting lost in the walled garden, but they also needed to understand the information they read. A major intersection of navigating and understanding was how participants decided that they had all the necessary information they required, and in particular how balanced that information was. They needed to navigate to view the information, and then understand it to realize what was lacking. Many participants mentioned the need for balance in what they read, looking explicitly for a mix of articles. This balance of articles did not simply mean a balance of pro and con articles—participants mentioned the need for balance of time periods and geographic areas as well.

During the think-aloud protocol, participants wanted to see a different perspective to that of the article they were reading, particularly at the beginning of the reading condition when they had read only one or two articles. While reading an article that was against the oil sands, Maggie commented “Okay, let’s go against it then, take the other side” while following a link to an article that explored their value. Judy, another participant, offered some insight into this decision:

I would probably go to one of the First Nations ones, because that would be an opposing opinion? Just because, obviously the people who work in that industry are gonna be like “we need this”

Here, Judy breaks down the sources of the information she is getting and, having just read an article about why the Canadian economy needs pipelines, immediately moves to look for an article that she assumes will not support them—which she argues are the articles discussing the perspective of First Nations people.

The need for balance was perhaps most noticeable in the context of the two CNN articles about Keystone XL, one of which supported it and the other which protested it.

Following a linking style seen on CNN’s website, these two articles were linked to each

other with a link labeled “A Different View” followed by the name of the article. Seven participants moved between these two articles, and one participant, Alexandra, explained that it was in order to:

. . . see an opinion on both sides of the story. Because they both had good points, on one hand if you were to install it there'd be more jobs, gas would be cheaper, things like that. But then, there are lots of reasons that it could be bad, so I wanted to make sure that I was seeing both sides.

Alexandra pointed out here that she wanted to see both points of view in order to understand the issue more, although she ended the study against use of the oil sands. However, she still saw viewing “both sides of the story”, as she puts it, to be important, as did the other participants.

Reading an article with a different perspective can also provide new information. John, for example, wanted to see points of view different from his own. He spent more time looking at articles that were against his point of view, and explained that he wanted to read:

. . . against my opinions, and because it's a counter point. If I am reading articles that I agree with, it can be difficult to extract useful information

Interviewer: Why?

John: Because it's either stuff I already know, or that I don't need convincing on, or it reinforces my own view, and I am less interested in things that reinforce my perspectives, so I spent a little bit more time on that article because I don't often see very compelling arguments—I didn't think that argument was very compelling—but I try to balance it out, pay a little bit more attention to what I disagree with.

John suggested that part of the reason that people read articles against what they agree with is to gather new information, and pay more attention to it. However, he also pointed out that he didn't find the arguments presented ‘very compelling’—suggesting that he counter-argued against them and found them lacking. This suggests that, while the desire to read both sides of the argument is there, both sides are rarely equally compelling for each participant, clarifying how participants' need for balance didn't necessarily mean that they ended up with an opinion that reflected that balance. Participants clearly wanted

to know both sides of the argument, so that they didn't feel that they were missing information. However, this did not mean that they would not have an opinion about that information.

4.3.3 Filling in the Gaps

Participants wanted the information they read to be balanced, but they also wanted it to be complete, meaning that they weren't missing anything. One of the key characteristics of hypertext is the possibility of linking readers to background or source information¹¹⁷, which lets them learn more about a topic, or fill in a gap in their knowledge. While reading, participants noted that they needed more information in order to completely understand material. If this information was hyperlinked, they followed the link. However, not every term that interested every participant was hyperlinked. In the study, participants were kept in the walled garden, and thus were limited to what was hyperlinked. However, participants explained that, were they reading this information at home, they would turn to google in order to add to their understanding.

Emmett explained how using the google can help him to read better quality articles, which attempt to do some analysis of the situation at hand, rather than simply explaining the basic facts for a general audience. He pointed out that the need to google terms depends on the article:

Some do define terms, if they're written for a general audience, but if they're a little more specific they won't, if they're more focused on the analysis, then you don't want the definition, it gets in the way. And I'd rather read the better article and google the term.

He suggested that googling terms allowed him to acquire the information that he is lacking from his analysis. This allowed him to read articles that are meant for a more specific audience, which he referred to as 'better' articles. However, according to Max,

¹¹⁷ De Maeyer, Juliette. "THE JOURNALISTIC HYPERLINK"

leaving articles to look up a term interrupts the narrative of an article and might be confusing. Max provided some insight into how to deal with this problem:

In a short form like this, [I use] google. Like, I'd finish [the article] and then go google it. But in those really long form, like 10-12 page articles, I wouldn't wanna continue without knowing what the thing was or what the issue was, so I might, like, quickly open a new tab, read up on that really quick, and then come back to the article more informed

Max explained that his need to google terms depends also on the form of the article. For short articles, he googles the terms after finishing the article, in order to avoid disrupting the narrative of the article, which he also noted as important in the interview. However, for longer articles, he uses tabs, as discussed above. This use of tabs should, according to what others report, allow him to gather new information and integrate it with the article he has already seen without losing his place in that article.

While the ability to google terms in order to understand things is excellent, doing so requires motivation and effort. While the participants above note it as something they frequently do, this may not always occur. It is one thing to simply look up a technical term that a reader doesn't know, but sometimes the gaps that readers see in information are bigger and more complex. The more difficult the missing information is to find or understand, the less likely it is to occur. For example, while reading about the National Energy Board's decision-making process when approving pipelines, Judy expressed some skepticism in terms of how that process worked, saying "I would just wanna see which point they've covered? If they've considered *all*." In the semi-structured interview, she was asked to expand on this response.

Interviewer: Your instinct was, like, "okay, I want to know who they're listening to." How would you normally try and follow up on something like that?

Judy: I guess if I was really, really, invested in the issue, I'd probably just take it to google.

Interviewer: Does that tend to happen, do you get really invested?

Judy: Umm (shakes head)

Interviewer: Not really?

Judy: No.

While Judy realized that the best way to follow up on her question was to research it further, which she would do using google, she was also aware of the fact that taking that action would require her to be “really, really invested”, which she admitted doesn’t necessarily happen that often. She knew how to answer her own questions, but doesn’t necessarily have the motivation to do it all the time. Her answer underlined the difference between access to information and actually following up on that information—and how having to go search for information relies on individual investment, which is not always present.

4.3.4 Evaluating Source Information

Readers have to have enough information, but they must also evaluate the material that they do read. For many, this means focusing on the sources of information, and analyzing the potential biases of those sources. Throughout reading, participants considered the source of the information, including the website, the author, and the date when the article was written, remarking on it, or sometimes returning to check the source midway through reading the article.

The first way to check the source of an article occurred before participants even clicked on the link, by hovered over the link and checked the URL. Within the study, the source was always the URL of the walled garden, as well as the article title. While some participants used this to check for articles that they may have already read, Richard pointed out that this way of checking where you are going on is more important when navigating on the web, as a whole, for safety reasons.

“In terms of looking where the link leads, I think it’s just a habit that been ingrained from a “make sure where you’re going online perspective” I think out of habit I look to make sure that I’m not clicking on something malicious”

This habit that Richard explains allows him to know where he is and where he is going, and helps him make the decision about whether he wants to follow the link. The clearest piece of evidence provided by the URL of online news articles is the site that hosts the article—usually, the corporate source, such as cnn.com or cbc.ca.

Once participants had clicked on the link to go to a specific article, the corporate news source was indicated by a prominent banner. When discussing his tendency to check the source of material, Max explained why he finds this helpful.

I like to keep track of who's saying things, and why they're saying it—their biases and their perspectives. A bias isn't necessarily a bad thing—I don't think I was ever, like, "oh this is CNN, this is gonna be terrible" but I wanna know where they're coming from.

Max explains here that he wants to know what the source of information is so that he can keep track of it, and consider the “bias and perspective” as he puts it. James, similarly, looked for confirmation of the biases that he identified in an article that he viewed as right leaning, saying that the perspective in a Financial Post article “seems again in keeping with the likely biases of this newspaper, that they’re blaming it on the NDP government”.

The corporate source of the information was obviously a primary concern. Max was the only participant who noted the journalists’ names when reading, and he didn’t recognize the names that were present. It seemed that the corporate source was more important than the journalist or writer. However, several participants reacted positively to the article from the Aboriginal People’s Television Network which interviewed Bill Nye, seeing him as a trusted source. Maggie responded to seeing his name by immediately following up on that article, saying “that Bill Nye name is jumping out at me, I’m gonna go for that”, and immediately following it up, pointing out that Bill Nye “has been teaching us science since we were little”. Sasha explained that “Bill Nye would probably be a reputable source to listen to or pay attention to? Cause he’s not just spouting stuff, he actually knows, he’s educated in the subject.” She points to his education and background, arguing that this will make him a ‘reputable source’.

These participants had previous knowledge about Bill Nye, but it can be difficult for participants to be able to evaluate the quality of a source if they don’t already have that information. However, John points out that the ability to search out more information isn’t only useful when it comes to looking up terms or information.

Another thing I will do sometimes is, like,—if there is not a link, I'll google things, so I might look up an author, or I might look up something that catches my eye, you know, something like that. See who wrote the article—if I'm not familiar with the publication, I might look it up.

If John lacked information about the source that he was dealing with, he would use a system to get background information on the author or the publication that was similar to the system Max and Emmett explained for terms they don't understand. This allowed him to contextualize the information that he was seeing. However, looking up information requires extra effort, and thus requires energy and investment on the part of the participant, as outlined above.

Evaluating the quality of the information that is presented requires that participants know and understand the source of the material and the likely biases of that source. For some, this means inferring the bias of the article by reading, but for others this might mean looking up information about the sources and how they might relate to the argument, either through hyperlinks or by outside research. Knowing the source, however, provided the reader with tools to evaluate the biases and perspectives of the article. Two participants, Richard and Judy, actually resisted forming an opinion throughout the study, and both explained their lack of opinion was due to their trouble evaluating the source material they read. This process, however, will be discussed in depth later in this chapter. Finally, being able to evaluate the information which was presented frequently factored into making decisions about what articles and sources participants wanted to read at all—and what they considered to be not worth the effort.

4.3.5 Decision Making: To read or not to read

These discussions of the need for balance, filling in gaps, and evaluating sources all combined to affect how participants chose to read or not read specific articles. Obviously, participants did not read all articles. Participants' discussions of why they chose articles were built on the themes above, and explored how they made the decision "to read, or not to read."

One of the most noticeable reasons for choosing to read an article, which was not discussed above, was its relationship to previous interests that the participants held, or work that they were doing outside of the study. When opening an article about rising crime rates at the oil sands, James explicitly linked his choice of reading that article to a previous interest, saying “well, given that I have an interest in crime, I am going to read this one next”, as he did so. Richard tied his choice to open articles about First Nations’ rights to previous reading he had been doing recently for university classes, saying such articles “popped out to [him]” when viewing a list of topics. Anna, another participant, pointed out that she didn’t have much of a background or interest in First Nations rights, and so wasn’t interested in those articles. Whatever the topic, if an article seemed to be related to a previous area of interest for the participant, they tended to choose to read it, and if the topic was one they found uninteresting or boring, then they often chose not to do so.

Another reason that many participants chose to read a specific article was in order to follow up on information that they found in an article they read and wanted more information about. For many, this took the form of the previously discussed “need for balance,” but for others, this included following up on new information that they noticed in the articles they read. Sasha provided an example when she decided to click on an article about the First Nations’ opposition to the Energy East pipeline.

I picked this article just ‘cause I’d never considered local impact. I was under the assumption that if there was an oil plant or a pond, I guess, that there wouldn’t be people living near it. But I’m getting the sense that that might not necessarily be the case, that maybe there are people who live relatively close to it out there.

Here, Sasha noted that she had made an assumption—that oil sand and pipeline activity would occur away from human spaces. She realized, after reading more, that this might not be the case, and thus she wanted to gather more information about it. She therefore followed up on the theme of first nations and land rights to attempt to gather more information about that. In doing so, she tried to follow the information that she was interested in from a specific starting point, which drove her to choose specific articles over other articles which did not seem to provide the information that she thought she was missing.

However, perhaps the biggest factor determining article choice was the source. The trust that many participants had in Bill Nye, which drove them to read that article, has already been discussed, but perhaps even more noticeable is the way in which certain participants argued that they would not read articles from particular sources. When discussing his previously mentioned tendency to hover over links to view the URL, Richard also said that he did this “just to see where it’s going, I mean if it’s something like Fox News I’m not gonna click on it, I’m not wasting my time with that.” For him, the source was hugely important in how he made the decisions about what to click on and what he read, and certain sources were considered to be not worth the time reading them would take.

James expanded on this issue further, pointing out his own tendency to check for sources while reading through the walled garden, explaining:

I would say that I just, in general, don’t read right wing news sources. Which is maybe a little bit myopic on my part, but I think it’s mainly just our drive towards confirmation bias, we like to read things that are already consistent with our views.

While James points out that his reading choices might be myopic, he points out that this probably comes from his own drive to confirm what he already believes. James pointed out that within the walled garden “when I clicked, I didn’t necessarily know what the source I was clicking would be, so I couldn’t avoid ones. I would hover and look at the link otherwise.” For him, it doesn’t matter so much what the content of the article is—it’s the source that decides whether or not he will read the article.

Overall, when making decisions about what articles to read, participants often chose to read articles that interested them, or followed up on ideas that they had noticed in articles that they were reading. However, a major factor in how participants chose to access information is their trust in, or response to, the source of the material. While participants seemed willing to read articles that were contradictory to their opinion, even in some cases *preferring* to read such articles¹¹⁸, they were less willing to read articles that were from sources that they disagreed with or did not trust. This helped them to navigate

¹¹⁸ See John’s discussion of reading opposing opinions in “The Need for Balance”

through articles, and, as Richard points out, to avoid wasting their time with information that they considered to be ‘not worth it.’

4.3.6 Integration of Information

What participants chose to read is important, but so is how they reacted to, or understood, what they did read. According to Madrid et al¹¹⁹, understanding non-linear hypertext requires information integration, which is the ability combine multiple pieces of information from different sources. This can be a difficult process that requires effort, since the person must understand and evaluate multiple pieces of information and combine them in meaningful ways, both with new information that is being learned while reading and with previous knowledge. However, integrating information is linked to learning and understanding, since it requires paying close attention and the aforementioned understanding and evaluation of the information being learned. As well, it is linked to Central Route Processing, which indicates that readers are evaluating arguments based on the arguments themselves, as opposed to peripheral cues¹²⁰.

Most participants within this study showed clear signs of integrating information in the think-aloud protocol and the semi-structured interview, comparing new information both to other articles that they read within the walled garden, and to previous knowledge. In general, integration was most obvious when participants read new information that was clearly in contrast with information they had previously read. For example, Max remarked when reading an article that argues that the demand for crude oil will mean that it will continue to be sold regardless of whether or not new pipelines are built:

“It’s sort of the antithesis of that first article I read, ‘cause that was saying “we need these, otherwise the whole industry will collapse and we need to prop it up, while this guy is saying “well, it really doesn’t matter””

¹¹⁹ Madrid et al. “The Effects of the Number of Links and Navigation Support on Cognitive Load and Learning with Hypertext: The Mediating Role of Reading Order.”

¹²⁰ Petty and Cacioppo. *Communication and Persuasion: Central and Peripheral Routes to Attitude Change*

In contrast to the article he was reading at the time of this comment, the first article that Max read argued that new pipelines needed to be built in order to preserve the Canadian Oil economy. Max clearly recognized the contrast in opinions here, and noted their incompatibility, although he didn't immediately resolve the contrast.

Sasha, another participant, commented similarly on the contrast between two CNN articles on the Keystone pipeline on the topic of oils spills.

An article that was for it, was mentioning that “there will be minimal environmental impacts as long as we follow the restrictions”. And then it was like, yeah, but one of the pipelines had, like, 12 spills in the first 12 months of operation.

However, unlike Max, Sasha commented on this incompatibility during the post reading interview. For her, one argument was clearly more persuasive than the other—she recognized that one article argued that “there would be minimal environmental impacts”, but refuted that argument with information mentioned in a different article about previous spills. Unlike Max, who only articulated the contrast in opinions, Sasha integrated information to form a specific argument. However, both of them combined information from different articles within the walled garden.

Another participant, John, also combined information from different articles, but also supplemented it with information that he previously knew. He pointed out that:

There was one article that said, like, a lot of celebrities are against the pipeline? And that the oil industry has, like, the facts—and I'm air quoting, when I say “facts”—but then they also had Bill Nye, and they also have people the scientific community who clearly disagree, from my understanding. At least, people who recognize the threat of global warming, I think, as well, which is the majority of the scientific community from my understanding.

Here, John added not only the refutation of the claim that only “celebrities” are against the pipelines by pointing to another article—“Bill Nye Visits Oil Sands”—but also added in the information he had about the scientific support for climate change, combining these arguments from an article with his own previous knowledge. Maggie, another participant, provided another example on the same topic, adding that “it is pretty ironic—the first nations are getting screwed over for resources that I guess were originally theirs.” Like

John, she combined the discussion of the article—debate over land rights and oil access, with her own previous knowledge of Canadian history.

All of these examples show the ways in which participants integrated information from the various articles that they navigated through with the hyperlinks presented. The presence of information integration, both between articles and with previously known information, suggests that participants were engaged in reading the articles, and were evaluating information presented to them via the central, rather than the peripheral, route. It appears that they were focusing on the information presented and the argument itself, rather than forming an opinion based on peripheral cues such as their emotional state or the way the information was presented. Usually, however, information integration was for a purpose—to form a counter-argument against something that the participant disagreed with.

4.3.7 Critiquing Information

When looking at how participants read articles, it is important to know not only what they read, but how they responded to the articles, since reading does not mean agreement. One key way of understanding the difference between people paying attention to, or reading, information, and being persuaded by it, is counter-argumentation. Counter-argumentation occurs when readers read and understand the information being presented to them, but respond with other points in order to critique the material that is presented. It requires information integration, since readers must respond to the information with other knowledge. While counter-argumentation was a major way in which participants resisted the perspective presented in specific articles, this resistance could also occur through pointing out inconsistencies within the argument itself. Within this study, all participants showed signs of counter argumentation within the think-aloud protocol, noticing inconsistencies in the arguments of certain articles, or noticing issues with how arguments were organized or presented.

One major circumstance in which participants created counter-arguments was in response to articles that they saw as being one sided. These were usually articles that they saw as

ignoring the possibility of expanding Canada's resource economy to include clean or renewable energy:

Yeah, a very sort of economic thing. It's—do they have a point? Yeah, maybe, I mean we could build it sort of and prop up the oil industry and oil sands in Canada, but there's probably an economic argument to be made for other sectors too—maybe clean energy sectors. And they could create jobs too."

Here, Max argued that the article "Canadian Oil Patch will be out of the Game if New Pipelines Not Built" was focused too much on the economic argument, and conflated that argument with being pro-pipelines, which he said was false—an economic argument could also be made to justify switching to clean energy. Other participants had a similar argument—for example, while reading a critique of celebrities who are against the oil sands¹²¹ Sandra considered other options, saying "I'd like to know what people think would be the alternative to just shutting this down, like what that would look like". Rather than just shutting down the oil sands, she looked for alternative possibilities. When participants considered the articles to be one sided, they counter-argued with alternative perspectives or solutions.

Participants also formed counter-arguments when they had previous interest in the information presented, which gave them material to respond with. For example, Emmett explained that he had an interest in business and economics, and he formed a counter argument to the discussion of jobs and economic interests. While reading an article that critiqued a claim about the number of jobs that would be created in the USA by building the Keystone Pipeline, he pointed out

They talk about "it'll take 500 trucks a day off the roads" which is good! But you gotta wonder like, what the carbon payback would be in building the pipeline. It doesn't really offset the costs—say it takes them 2 years. . . given the number of cars [mental math, inaudible]. .it would take like 52 years to offset the carbon difference. Economically, yeah, but environmentally, that's a long time! It's questionable.

¹²¹ Brad Wall urges Oil Industry to fight Celebrity critics with facts

In doing this, Emmett picked up on his own interests and knowledge about carbon knowledge. His number of 52 years is an estimate, and may not be correct since he didn't have that much data. What matters, however, is the fact that he combined the knowledge presented in the article (500 trucks off the road) and combined it with his own interests to point out that the carbon saved from building a pipeline is negligible—and as he points out, questionable.

Other participants also considered and critiqued more peripheral cues related to how the articles were written and presented while reading. James tended to respond very negatively to rhetorical appeals with which he disagreed, although he did not provide immediate counter arguments. The job article which Emmet closely considered received a different response from James, who immediately responded to a rhetorical reference to sports imagery:

A bipartisan fumble, sounds like a sport. Oh Washington Post. Of course an American news source would use a football metaphor. . . Jobs jobs jobs. Rah rah rah.

While reading a later article, he seemed to find an appeal to Canadian nationalism equally weak:

[Reading] The path to prosperity, the alternative is a devolution to a weaker confederacy—this is what's at stake here, the very future of the country as we know it. . . Who writes this twaddle? That's enough of that.

James' responses showed an immediate critique of the rhetorical devices that were used within the articles. When reading, he was not only paying attention to the content of the argument within the article, but how it was made, and critiquing that, as he considered the argument. He critiqued articles on both their content and their structure.

Sasha also paid close attention to the structure of the articles, and critiqued that. While reading two CNN articles, "Why We Need the Keystone Pipeline" and "Stop Keystone XL before it is too late", she noticed some inconsistencies in how the articles were linked to each other.

It's really interesting that—in the last article there was a link to this article as well, but it was much farther down in the article, whereas this, the different view, why we need the keystone pipeline is right at the beginning of the article. I find that . . . suspicious.

Rather than just noticing the argument itself, Sasha pointed out that the linking structure here privileges reading about why Keystone should happen—the link from the article that opposes Keystone to the article that supports it is at the top of the page, and the opposite link is much further down. She noticed how the structure of the hyperlinks might push readers towards certain articles, and pushes back against it, noting that it makes her “suspicious”. She critiqued the fact that the structure of the information seems to privilege reading one article (Why We Need the Keystone Pipeline) over the other (Stop Keystone before it's too late).

Participants evaluated and considered articles that they read while navigating through the hypertext of the walled garden, and also demonstrated that reading information wasn't necessarily the same as agreeing with it, since it showed the interaction between knowledge that the participants had, and what they were reading.

4.4 Navigating and Opinions

The first major question that drove this research asks **how do young people navigate through hyperlinked online news?** I have attempted to answer this question above, through breaking down how participants navigated through the walled garden. The second question asks **how might this affect opinion formation, change and reinforcement?** There were no participants who changed their opinion during the study, but there were participants who formed and reinforced their opinions about the oil sands during the study, as well two participants who resisted forming an opinion despite reading through the information in the walled garden. Exploring how these participants navigated through, and reacted to, what they read, will help to illuminate how people might form opinions throughout the process of navigation.

4.4.1 Opinion Reinforcement

The oil sands is a prominent issue in the news, and it is therefore unsurprising that all participants at least knew that it was a highly disputed issue. Five of the 11 participants knew enough before reading to express an opinion about the pipelines and oil sands. Two participants explained that they were against continued use of the oil sands and pipelines, and definitely against expansion. A further three had mixed opinions, noting the economic need for, and current reliance on, oil and fossil fuels, while also recognizing the damage to the environment.

Anna and John were both against the pipelines when they began the study, although they admitted that they didn't know that much about it themselves. Instead, both aligned themselves with others who were against it, and then reinforced that opinion as they read through the materials. John pointed that "political groups that I tend to align myself with tend to be against extracting oil and building pipelines" while Anna spoke about a high school teacher who had introduced her to the issues of the pipelines and had been strongly opposed to building them. John began with an anti-pipeline article, and Anna began with a pro-pipeline article. As explained in the above section on needing balance, John wanted to read a balanced mix of articles, and specifically sought out positions he disagreed with in the walled garden, but counter-argued against them and did not find them persuasive.

When both Anna and John read through the articles, both seemed to reinforce their anti-pipeline opinions. Despite reading a balanced mix of pro and anti-pipelines articles, they ended the study with the same opinions that they began it with, although with a clearer explanation of why. John explained "I think we need to reduce our reliance on oil in general, so I feel like a lot of times things like pipelines are used to provide short term temptations which will just continue our reliance on fossil fuels and oil". John used the new knowledge he had gotten from pro-pipeline articles to further critique the logic that supports the pipeline—specifically short term thinking. Anna pointed out that "building the pipelines would be for the benefit of a small group of people [owners of oil firms and oil workers], rather than for the benefit of the whole country, so somehow I don't find

that persuasive. Environmental problems are still the big thing.” Both referenced articles that they had read in their explanation, indicating that they had furthered their understanding of the issue through reading, but had not changed their opinion, instead reinforcing their existing opinion with their new knowledge.

Three other participants used their previous knowledge in similar ways, but didn’t really have a clear opinion. Max, Emmett and James all explained that there were serious economic reasons to continue getting oil from the oil sands, and transporting them by pipelines, but also expressed a hope that reliance on fossil fuels would decrease in the future, and that the Canadian economy would diversify in order to allow for investment in other sources of energy in the future. All three of these participants began with a pro-pipeline article. After reading, Max explained that reading through the walled garden was

a reinforcement, it’s like a refreshing of what I had sort of heard. There’s an economic argument to be made, both for and against. Aboriginal groups are still opposing it for a whole bunch of reasons, and there is always the environmental argument—it’s not great for it.

Max didn’t change his opinion, but he did note that he had learned a bit more about the issues by reading through the articles, and Emmett and James’ responses were similar.

All three of these participants had a fair bit of prior knowledge of the issues, and counter-argued and considered the articles they read, frequently integrating the information they read with their previous knowledge. For example, when discussing his hope that there could eventually be a move away from fossil fuels in general, Emmet explained:

There was an earlier article that talked about “the reality is, it’s going to be very hard to get us off oil”. And that’s true. It might take 25 years, at least, to try and change that. For cars, the average lifespan is 15, 20 years. So if they are making cars in 5 years, we’ll still be using them in 25 years. So it does create a problem. If we’re gonna get energy from other sources, we need that infrastructure quickly.

In his explanation, Emmett started from one the articles he read—Brad Wall to Oil industry “Fight Celebrity Critics with Facts”—but also integrated information by blending in his own knowledge about the life span of cars in order to discuss the issues of moving from fossil fuels to renewable energy, and reinforcing his own ideas in the process. This pattern of combining information with previous knowledge in order to

critique information or expand on an issue was common in participants who reinforced their own ideas, most likely because they had previous information to begin with.

When participants had an opinion, pre-reading, they had the same opinion after reading. However, some participants did link their explanation at the end of the study to what they read during the study. For example, Anna, who was against the oil sands, explained that she thought the articles in the environmental impacts category “made their point the best”. Emmett kept tabs of articles that he read open, and looked at them while making his point, as well as referencing them. John explained that “a lot of these articles mentioned job creation and job growth”, but disagreed with that point.

Max and James, however, did not reference what they read in the study while actually explaining their opinion. While they mentioned things that were present in the articles, such as the environmental issues and economic concerns, they also brought up these issues before reading. However, Max and James also easily had the most information about the oil sands before reading the articles. Max’s response to the first two questions about what he knew about the oil sands and his opinion clocked in at 236 words, while James’ was 452. Sasha, who had the next longest response to these questions but did not express an opinion, responded with 176 words, and every other participants’ response to these questions was less than 120 words. The length of participants’ responses to questions is obviously due in part to how they speak, but the fact that these participants had far and above the longest responses suggests that they probably also had the most information when entering the study. After reading, Max commented “Did I learn anything new? Not really”, which supports this theory. With this much information, it unlikely that their reading would seriously affect their opinion, since they didn’t really gather new information.

Of the five participants who had a pre-existing opinion, three used the articles they read to support that same opinion after reading. The other two made their case with information that was present in the readings, but they also expressed the most prior knowledge, making it difficult to ascertain whether their argument came from the reading or their prior knowledge. Overall, however, even when participants learned new

information within the walled garden, those who previously expressed an opinion on the topic, before reading, kept that opinion.

4.4.2 Opinion Formation

When participants did not express a previous opinion, the process was a little different. Four participants formed an opinion during the study. All four participants began with no opinion, and by the end of the study all were against the pipelines. All four also started with an article against the pipelines. This suggests that the first article may have been influential in their final opinion. When forming their opinions, participants were clear about the reasoning behind their decision.

Interviewer: Would you say that you do have a little bit of an opinion now?

Sandra: Yup, I do.

Interviewer: What would that opinion be?

Sandra: I'm—I'd say that I'm against it, because I would prioritize in my mind, the needs of the animals and these vast ecosystems that rely on the environment being clean. And not only that, but also just public health, like we rely on that water, and we don't have the technology to be cleaning up the kind of spills that we're at risk for. And given the success of past pipelines and seeing how inefficient they are, I would not support it all. I see the environmental impact and I don't see the benefit.

Sandra here clearly explains her reasoning for choosing to be against continued use of the oil sands and building more pipelines. She prioritizes the environment, which was the focus on the first article she read, as well as health risks to humans and animals around the pipeline, also heavily discussed in the first article she read. She also points to the lack of success of past pipelines, pulling on information from the article “The Case Against Keystone”. Throughout reading, Sandra read three articles which were against the pipeline, and began and ended with articles that were in line with her opinion. She also read three articles which argued for the pipeline, but found them frustrating, explaining:

I don't like that this is something that is such a big issue for the environment and its being considered a job creator. And while it would have those effects, I feel like the environmental issue is the issue at hand and that's frustrating.

She also pointed out that the jobs created by building the pipeline would be fairly short term, saying “what about when it's done?” and suggested that talking about jobs was just

a way to “advertise the pipeline”. Her explanation at the end of the process was built on what she saw in the first article, and she counter-argued against articles which were for the pipeline.

Sasha also began with the anti-pipeline article that emphasized environmental issues, although she ended with an article that was for the pipelines. While reading, she only formed counter arguments when reading articles that were for the pipelines, pointing out that articles “had a propaganda-esque feel” and didn’t discuss “the potential problems”. When expressing her final opinion, she began her explanation by pointing out that “if you can see these sands from space, that’s a problem”, explicitly referencing information from the first article.

Alexandra did the same thing as Sasha and Sandra, but was quieter during the think-aloud protocol and seemed to struggle with articulating her responses at all. She began with the same anti-pipeline article and ended with a pro pipeline article. However, when explaining her opinion, she argued that the environmental and land issues were more important than job creation. She did not explicitly reference the first article, but did mention themes that were dealt with in it, as well as referencing a CBC article about the Energy East pipeline, saying “I don’t think it’s the best option to make the pipelines”. However, the fact that she wasn’t particularly eloquent during the think-aloud protocol makes it more difficult to infer how she was responding to the articles as she read them.

Like the three above, Maggie also began with this same anti-pipeline article. However, she didn’t really counter-argue against pro-pipeline articles as she read through the material like Sasha did. In fact, while reading one article, which argued for the pipelines, she seemed to waver in her opinion, saying “ahh, I’m torn now, gotta read more”. When she explained her reasoning, it was the final article that she saw as most important, explaining:

It was really good that I got it from both sides, cause I—I saw it from both sides before but I honestly didn’t really know that much about it. This article in particular was good [Stop Keystone before it’s too late], I’m glad that I found this one eventually. I’m now on the side were I don’t think we should do it

She went on to explain:

this last paragraph pointed out that if you think about the benefits; it's creating jobs and, you know, all the rest of that kind of thing, that side of it. . . It also pointed out that you could focus on renewable energy sources, which is what we're moving towards, and putting that money there, and you could create jobs like that, and I mean that's a growing field, which is probably better.

For Maggie, the final article seemed to be most powerful in forming her opinion, since it was what pushed her into deciding that she was against the pipelines. However, although she was torn, she was never actually for the pipeline, and many of the key points that she references are mentioned in both the final article that she read, as well as the first.

While all four of the participants discussed above began on the same article and ended with the same opinion, there were differences in how this occurred. Sandra, Alexandra and Sasha all referenced topics presented in the first article in their explanation of their opinion. Sandra counter-argued against articles she disagreed with by explicitly referencing topics from the first article, while Sasha clearly remembered the first article the most, explicitly citing it. Maggie, on the other hand, referenced the final article she read the most, while expressing her opinion, and only counter-argued after finishing all of the reading, explaining that the pro articles “strategically left things out”. It is interesting that all participants who didn't have a previous opinion and began with the an anti-pipeline article expressed an opinion against the pipeline at the end, even though two ended with a pro article and two ended with a anti pipeline article.

4.4.3 Resisting Opinion Formation

Two participants, Richard and Judy, also reported having no opinion when they started reading through the walled garden, but they were both randomly assigned to begin reading through the walled garden with a pro-pipelines article that emphasized the economic need for creating new pipelines (Canada's Oil Patch Might be Out of the Game if Pipelines Not Built). Unlike the other four participants who began with no opinion and who ended up holding the opinion that they began with, both participants resisted forming an opinion, explain that they “had no clue” (Richard) or “were still unsure” (Judy).

Both participants had an explanation for their lack of opinion after reading—Judy explained that “even though you’re reading these things, I think you have to know where the opinions are coming from, who they’re working for . . . there’s still, like, an agenda there”. The agenda she referenced seemed to make it difficult for her to form a clear opinion—she seemed to distrust the information that was presented to her, but wasn’t able to articulate what sort of information would be better to further her understanding and allow her to form an opinion.

Richard had similar reasoning for his lack of opinion, suggesting that he “need[ed] to do more reading, but not this reading”, since all that was presented in the walled garden was “mainstream news¹²²” which isn’t what he prefers. Both Richard and Judy struggled with forming an opinion, and found themselves distrustful of the news sources that were presented. Richard explained how he would go about gathering more information to help him with forming an opinion, saying “generally I will check out a Wikipedia article or five, and then I’ll go to less mainstream news media”. Richard was distrustful of news media in general, particularly mainstream media, explaining that he “prefer[s] to get a more well-rounded image, and I know that mainstream media tends to soften things to make them more palatable, and I can handle things that aren’t so palatable”. For Richard, it’s preferable to get a clear and balanced picture of events, even when that means dealing with messy and uncomfortable information, and he distrusts mainstream media for potentially censoring that kind of information.

While reading through the articles, neither of these participants really seemed to integrate information from the articles they read. They did occasionally make connections with information they previously knew, usually to critique a point. However, these critiques didn’t necessarily respond to the material presented, but expressed questions about it. For example, Richard at one point said “yeah, I have—like just question marks?” and Judy also asked questions or asked for more information, such as her question about what the

¹²² While Richard’s exact definition of Mainstream Media is unknown, from the comments he made it seems likely that he is referring to a variant of Chomsky’s definition of Mainstream or Agenda setting media, from “What makes the Mainstream Media Mainstream”

National Energy Board considered when making decisions about whether pipelines should be built. While they did respond to the articles in the think-aloud protocol and seemed engaged with them, for some reason Richard and Judy didn't seem to compare the information presented between articles as much as other participants, and the vast majority of the think-aloud data gathered for both took the form of questions—not statements or counter arguments.

While both Judy and Richard had clear explanations for not forming an opinion, it is interesting that both of them, having started with no opinion, were unable to form one after beginning with an article that was pro-pipeline, while all participants who had no opinion and started with the anti-pipeline article comfortably formed an opinion by the end of the study. Some other participants sometimes critiqued the materials that were presented, and one (Emmett) suggested in the think-aloud protocol that the structure of the walled garden might be trying to force him into one opinion or another. Despite having questions about an agenda, other participants did form an opinion over the course of their reading. There are a few possible reason this may have occurred, which will be expanded upon in the following chapter.

4.5 Conclusion

The results from this study explore how young people navigate through hyperlinked online news articles, and how this might affect their opinions. The study allowed for the identification of several key ways in which participants handled navigating through online news materials. Some of these themes had been previously noted as important from the literature review. Participants navigated by avoiding disorientation through using tabs and tracking their position, attempting to gather balanced mix of article, and filling in gaps in the information they found. This helped them understand the information, which they integrated together in order fit it together with other information they learned, and what they already knew. They also counter-argued with perspectives that they didn't agree with in order to preserve their own opinion, as well as to critique and consider new perspectives.

Finally, the results also dealt with how participants formed or reinforced opinions while navigating through the study. In order to consider this, the participants were broken down into specific groups—those who reinforced their opinions, those who formed an opinion, and those who resisted forming an opinion at all. In general, it was found that participants tended to view articles from a variety of perspectives, most likely due to their previously stated desire for a balanced perspective, but that they frequently counter-argued against articles they disagreed with, in order to preserve their opinion. However, it was also noted that, for those participants who did not have an opinion, everyone who began with an anti-pipeline article ended the study against the pipeline, while those who began with a pro-pipeline article completely resisted forming an opinion.

The following chapter begins by dealing with some of the limitations of the study. It then goes on to further the discussions of how starting with specific perspectives might affect opinion formation, and participants' struggles with forming and valuing their own opinion within the amount of information that they have access to.

5 Discussion and Conclusion

This chapter discusses the results from the previous chapter in more detail, specifically, by focusing on potential explanations for why the behaviour demonstrated within the study might be occurring, and future directions for possible research. Primarily, it looks

at some of the limitations of the study, before discussing the results within the context of the theoretical background of the study.

5.1 Limitations

The primary limitation of the study pertained to sampling, and how data about participants was gathered. While saturation was reached, not every perspective on the oil sands was present in participants. There also seemed to be a gender bias in the sample in terms of who had pre-existing opinions and who did not. Finally, the lack of information that was gathered regarding participants' age and education provided another limitation, as these characteristics might affect how participants navigated through the walled garden.

Perhaps the most obvious issue with the sampling in this study was the fact that no participants were completely in favour of continued use of the oil sands and construction of new pipelines. Given that the sample population for this study was young people between the ages of 18-24, and recruitment occurred on a university campus, the resulting sample was relatively affluent and educated young men and women who had at least a basic understanding of issues regarding climate change and the environment. This meant it was unlikely that any participant would completely support the continued use of the oil sands and pipelines. This was supported by the fact that saturation was reached during the study such that the last three participants did not provide new data that hadn't been offered by any of the previous participants.

That being said, however, this may not have seriously affected the results of this study. It is unknown how participants who were pro-pipeline would have navigated and reacted to the walled garden, but there is also no reason to believe that there would be any difference from anyone else who holds a strong opinion, in terms of the broader discussion of navigation and opinions. However, repeating this study with a different topic would provide further information about what findings were general to navigation and opinion formation, and which finding may have been altered and affected by the topic which was chosen.

The other major limitation with the sample was the participants' age and gender. The majority of participants who had an opinion at the beginning of the study were men, while the majority who did not express an opinion were women. There were also major differences in how participants articulated and explained their points within the study. Within the study, age was only considered in terms of being a part of the possible sample—18-24. However, in the context of university population, this six year age gap could mean participants were anywhere from a first year student to potentially in the second year of a graduate program, which is a huge difference in education level. This would most likely affect their knowledge about the topic and responses. Further investigations that looked at the effects of gender and age on opinion formation in hyperlinked news would clarify these issues.

5.2 Discussion

This study provided a multifaceted look at how young people navigate through online hyperlinked news and how this might affect opinion formation and reinforcement. Combining participant observation, think-aloud protocol, and semi-structured interviews provided a multifaceted look at how participants read through the material. The information from each portion of this data collection was also able to support and inform the data from other parts. This combination of approaches allowed for a rich and complex understanding of how readers' navigation and understanding affects and is affected by, their opinions.

Previous research suggested that there were certain disadvantages to reading hypertext. Mainly, that participants could become confused, lost and unable to navigate, since understanding non-linear information requires participants to integrate information and this is more difficult than reading more linear information. However, previous research also suggested the process of integrating information promotes better learning since it also requires considering the material and fitting it together. In terms of opinion formation, the literature suggested that this should mean that readers consider the information presented via the central, rather than the peripheral route, and that the final article that readers access might seem to affect their opinion more than other articles.

In order to investigate these questions, 11 participants read through a curated collection of articles on the Canadian Oil Sands and the use of pipelines to transport that oil. While doing so, they reported on their thought processes using a think-aloud protocol, and the pathway that they took through the articles was recorded. They also reported on their opinion (or lack thereof) before and after reading the articles. After reading they also responded to a semi-structured interview that clarified their experience of the reading process. This data was then analyzed both within and across participants in order to discover key themes in how they navigated and how the opinion formation process might work within this context.

The findings of this study demonstrated that participants had mental strategies that allowed them to deal with disorientation, and they showed evidence of information integration, counter-argumentation and source evaluation. This helped them to decide what information they should read, when they had read enough information, or what they needed to read. This demonstrated that, while reading through the material in the context of the study, which limited distractions and offered a perfectly balanced set of articles and links, participants were engaged in reading through the material, and offered thoughtful and considered critiques of the information that was presented.

However, it should be noted that participants didn't necessarily move through the hypertext of the walled garden in the way that might be predicted by the psychological research on hypertext or by hypertext theory. That research dealt with readers who had to make decisions about whether they could follow a link or not, forcing participants to decide to leave or stay on the particular article that they were reading. The links also led to more information, allowing participants to follow up on ideas or learn more. This was also what was discussed as being a major source of confusion and difficulty by researchers such as Sandberg¹²³.

The walled garden was set up to allow movement between articles mid text while reading, but this was not always what participants did. They very much embraced the

¹²³ Sandberg, Kate E. "Hypertext: It's Nature and Challenges for College Students."

non-linearity of the whole hypertext, but seemed to read the articles themselves in a linear fashion. Once they had a sense of the topic in an article, they scrolled up and down the pages to check links or sources, opened various tabs which they switched between, and once finished, they navigated between these tabs in order to compare information from various sources. However, they usually read the whole article in a linear fashion before leaving the page, rather than making decisions about following a link in the midst of reading. This seems to help them navigate the walled garden and not get lost while reading.

In general, participants did seem to be very competent at reading through, understanding, and assessing the news media presented. They were critical of the material and, with a few exceptions, were able to find some articles that they found persuasive and of high enough quality that they were able to use that to seriously engage with the reading. They compared and contrasted information between articles and their own prior knowledge in order to come up with an understanding of the situation that they felt relatively confident about, whether it was focused on a specific solution or the issues that they were thinking about.

However, this study was also intended to investigate how this navigation and understanding relate to how young people form or reinforce opinions. Previous research suggested that the final article participants viewed would be more likely to impact their opinion or attitude¹²⁴, due to the recency effect—that is, that the final article that was viewed was the best remembered, and thus the most likely to affect the final opinion that was expressed. Within the study, the results from the think-aloud protocol suggested that the most recent article might be the most important article in some cases, but the first article viewed also seemed to have a major influence on the final opinion.

It must be clearly noted here that this study is *not* quantitative, and thus it cannot be concluded that the starting point was the primary reason that participants ended the study against pipelines. Despite this, it is still noticeable that *all* participants who has no

¹²⁴ Crano, William D. “Primacy versus Recency in Retention of Information and Opinion Change.”

opinion and began in the anti-pipeline condition ended the study against further pipelines, and *all* participants who had no opinion and began in the pro-pipeline condition did not form an opinion. This means that it is valuable to consider some of the reasons why this effect might appear while also recognizing the need for further investigation into the effect of the first article that participants read on their final opinion.

It is possible that the navigational aspect of reading the information could be behind this difference. It needs to first be noted that during the studies that prompted Crano's discussion of primacy and recency effects in opinions, the reading order was presented to participants; they did not choose what articles to read. In this study, however, participants needed to choose what articles to read after reading the primary article. McNamara¹²⁵ and Shapiro¹²⁶ note that prior knowledge is a major component of participants' ability to comfortably navigate through information and understand it, since it allows participants to contextualize the articles and understand how the information presented fits into the broader topic. For participants who do not have previous knowledge about oil-sands, it seems likely that the first article they read might form this background which they then use to help navigate through the information and understand what they are learning.

If this is the case, when integrating information while reading later articles, or while considering them, participants who lacked information about the oil-sands prior to beginning the study condition would repeatedly be referencing the first article read. This would increase the likelihood of this article being remembered and thus influential on the final opinion that was formed. As well, when participants do not have much information about a topic, they are less likely to counter-argue¹²⁷ against that point of view, making the argument more persuasive. This would be true for the first article regardless of later navigation, but that navigation might mean that constantly re-considering the first article

¹²⁵ McNamara, Danielle S. "Are Good Texts Always Better? Interactions of Text Coherence, Background Knowledge, and Levels of Understanding in Learning From Text"

¹²⁶ Shapiro, Amy M. "Promoting Active Learning: The Role of System Structure in Learning from Hypertext."

¹²⁷ Petty and Cacioppo. "Primacy versus Recency in Retention of Information and Opinion Change."

increases its persuasive power. The think-aloud condition suggested that this might be the case, since participants made reference to issues that were presented in that first article while integrating information and forming counter-arguments, and the four who formed an opinion in the study showed no evidence of counter-arguing against the first article they read.

Participants who didn't have an opinion at the beginning of the study, but began in the pro-pipeline condition resisted forming an opinion. Even when prompted, they didn't feel comfortable expressing one after completing the reading portion of the study. Instead, they pointed to issues with the sources and felt that they needed more information. It is absolutely possible that, although the conditions the participants began in were randomly assigned, that these two participants were already just likely to distrust sources and not want to form an opinion. However, it is interesting that none of the other participants had a similar response, despite expressing distrust of the sources. The fact that both these participants had similar reactions to the material and explained them in the same way indicates that this is something worth considering.

During the interview, the participants were clear about their reasons for not forming an opinion, which was that they did not trust the sources. Their explanation makes sense, particularly in the context of the understanding of news that was explained in Chapter One¹²⁸. These participants seem to be aware of the issues of power and control in the news media, and thus struggle with trusting any perspective—particularly given that mainstream news that was primarily presented in the walled garden. However, at least one participant who formed an opinion against the pipeline also had this awareness, which she made clear in the interview, as did several participants with prior knowledge. Biases in the information aren't necessarily a problem for forming an opinion if the reader is able to evaluate and critique them in order to balance what they think the bias is—but it was clear that these participants felt unable to do so.

¹²⁸ Specifically, political economic concerns about control of the news brought up by Chomsky and Herman, Boydston, and Uscinski.

There are a number of possible reasons that those who started in the pro-pipeline condition might not have been able to use that first article to form a starting point the way those that started in the anti-pipeline condition did. The first issue may have been with the article itself. The purpose of two starting points when creating the walled garden was to balance the effects of viewing order on participant's resulting pathway in the event that participants had no knowledge about or attitude towards, the issue of the oil sands at all. It is possible that the pro-pipelines article was not as clear and organized as the anti-pipeline article, meaning participants didn't want to use it as a starting point.

The second possible reason for the result was the characteristics of the participants. Given the fact that none of the participants expressed pro-pipeline opinions, it is possible that these two participants were also would have fallen somewhere between being against pipelines and having a mixed opinion like all other participants. In that case, it makes sense that they would be less able to accept an article that argued that pipelines *must* be built as a good starting point the way that the participants who were assigned to the anti-pipeline condition did. If all participants generally tended to be more focused on environmental concerns or torn between the economic concerns and the environmental ones in general, it makes sense that those who lacked knowledge would be more able to accept an article that focuses on the environmental damage and ignores the economics, rather than one that ignores that damage and focuses on the economics as a knowledge base.

For both participants without a previous opinion who formed and did not form an opinion, it seemed as the first article which they read was important in allowing them to form an opinion, since it provided (or did not provide) a knowledge base that they could use to evaluate and critique information as they continued to read. This was less important for participants who had prior knowledge since they already had information about the topic which they could use as this knowledge base.

At the beginning of this thesis, there was a section entitled "What is Hypertext?" It explained the simple definition of hypertext—linked packets of discrete information—and divided it into two main types: network and hierarchical. Hierarchical hypertext is

organized by an author so that the content of the material and the structure make sense together, such as hypertext that is organized in a “table of contents” style. In hierarchical hypertext, the reader is first presented with general or summary information, with more specific information presented later in the hypertext. Creating a hierarchical hypertext requires a great deal of effort on the part of the author or producer. As such, most hypertext is network hypertext, where links are created through keywords of ideas that have connections, but there isn’t meant to be an overarching structure in terms of how the content of the articles relates to each other.

The hypertext that made up the walled garden was a network hypertext, which contained links to various articles that could be followed up in order for participants to learn more about the Canadian Oil Sands. However, participants who comfortably navigated through the walled garden had a knowledge base that allowed them to critique and evaluate the information they read, as demonstrated by the way that participants with prior knowledge made reference to their own prior knowledge, and some participants who formed an opinion made reference to the first article they read as part of the think-aloud protocol.

It seems possible that participants used this base to turn a networked hypertext into what seemed to them like a hierarchical one, by figuring out what was important to them in the information and what information there was, and thus how different pieces fit together. When the information they wanted to have was not present, they expressed a desire to move outside of the hypertext to bring in extra information that they required. They seemed to be able to construct in the information in a way that made sense to them, and notice and attempt to fill in gaps that they noticed. Participants could use their prior knowledge to form the introductory starting point that characterizes hierarchical hypertext, or use the first article that they read. However, it is likely that they need to already agree with the perspective of that article at least a little bit in order to use it.

This study was meant to serve the purpose of a best case scenario of what occurred in terms of navigating through online news sources. Within the study, participants could not easily be distracted from the topic at hand—the lack of alternate articles in the walled garden, the presence of an observer, and the added focus of the think-aloud protocol all

made the participants unlikely to get distracted, and forced them to focus on the materials. This would have increased their likelihood of focusing closely on the materials, and thinking about them in the central, rather than the peripheral route, according to Song's ELM¹²⁹ of Interactive Media¹³⁰, which argues that interactivity (in this case, the decision making of hyperlinks) increases both engagement and distraction.

In a situation where participants are not as clearly focused on the material, they would not necessarily be as clear about trying to really get balanced and complete sense of information, integrate the information as much, or be as focused when evaluating the information. Nevertheless, the results show that young people are very much capable of engaging with and considering deeply information that is presented in a hyperlinked format. However, forming opinions based on that information is difficult and complicated. Even in this best case scenario the two participants who did not have prior knowledge and did not seem to form a knowledge base from the first article they read were unable to form an opinion. This might have ramifications in terms of the role of news as an information source for being engaged citizens in the democratic process, since it makes forming an opinion more difficult.

The other factor that made this study a best case scenario was the prior knowledge of the participants. The youth of the participants meant they were familiar with using online news media or getting news online: the survey demonstrated that the most popular news sources were social media and online news sources. That prior knowledge made it seem like they were able to counter-act disorientation. In general, the participants were able to comfortably read through the material without getting lost.

Thus far, prior knowledge has referred to prior knowledge specifically about the oil sands. However, it includes a lot more, such as their knowledge of how to read news sources and materials online and navigate through them, as well as broader knowledge of

¹²⁹ Elaboration Likelihood Model.

¹³⁰ Song, Indoek. The Elaboration Likelihood Model of Interactive Media.

the situation in question (in this case, knowledge of the Canadian political landscape, scientific knowledge about the impacts of climate change and its relation to fossil fuels) and knowledge of the actual news topic, all of which seemed to make it easier to form an opinion. On top of this, some participants seemed to also have prior knowledge pertaining to issues of the political economic circumstances surrounding news production. All of these sources of prior knowledge helped participants to navigate the walled garden. However, prior knowledge of the actual situation, or at least a knowledge base which could be used by the reader to evaluate other information, seemed to also be necessary in order to also really form an opinion of the material.

The results of this study demonstrate that it is a mistake to pretend that quantity of news is a replacement for quality of news. Placing the entire burden of understanding the news and forming opinion based on that news of the person reading that news is untenable, due to the sheer number of things that could interfere with their understanding. This is not to ignore the issues with mass produced media discussed in Chapter One, but to understand that the way people read news means that trying to remove responsibility of organizing the information from the producer so that the reader can form their own opinion isn't necessarily functional. While readers are able to navigate through hypertext and actively and critically engage with the material, it seems that they still need to have access to some basic knowledge about the topic to really be able to engage with the other information that is presented to them—and news should provide them with that information as well, not depend on their previous experience.

5.3 Further Research

There are many avenues of research that could be undertaken in order to further investigate the issues outlined above. Repeating this study with a different topic and a larger sample would provide information about differing opinions on the same topic, which this study did not have. Further testing about the impacts of age, gender, and education level on opinion formation with hyperlinked news media would provide information about how other characteristics of the reader might affect the process. Finally, engaging in a similar study with a mixed methods or quantitative approach would

allow for an investigation of how the primacy effect might impact opinion formation when reading through hyperlinked materials.

The first article that participants read did seem to be important in this study, and the think-aloud protocol and literature provide some explanations for why this might have occurred. However, the small sample size of the study meant that it was impossible to determine whether the first article that participants read was most important in determining their opinion in general. Creating a similar walled garden and gathering participants' opinions through, for example, a Likert-based scale before and after reading would measure the data in way that was more sensitive to incremental changes in opinions in a larger group, and be analyzed in order to consider the whether the first article seemed to be more important than other articles in general while people were reading through the material.

Following these avenues of research would help to investigate how young people read and engage with news media, and potentially help to create educational materials or design news sites that would promote engagement with the narratives being created. This study focused on a best case scenario and had a small sample size. However, a broader study which dealt with some of the other deterrents to engaging with news media discussed here such as motivation and distraction, would further deal with these issues potentially helping to create informed responses to some of the issues discussed above.

Bibliography

- "In Changing News Landscape, Even Television Is Vulnerable." *Pew Research Center for the People and the Press*. Accessed January 5, 2016.<http://www.people-press.org/2012/09/27/in-changing-news-landscape-even-television-is-vulnerable/>.

Amadiou, F. "How May Multimedia and Hypertext Documents Support Deep Processing for Learning?," *Psychologie française* January 1, 2015.
http://resolver.scholarsportal.info/resolve/00332984/unassigned/nfp_hmmahdsdpfl.xml.

- Amadiou, Franck, André Tricot, and Claudette Mariné. "Interaction between Prior Knowledge and Concept-Map Structure on Hypertext Comprehension, Coherence of Reading Orders and Disorientation." *Interacting with Computers* 22, no. 2 (March 2010): 88–97. doi:<http://dx.doi.org/10.1016/j.intcom.2009.07.001>.
- Baehr, Craig, and Susan M. Lang. "Hypertext Theory: Rethinking and Reformulating What We Know, Web 2.0." *Journal of Technical Writing & Communication* 42, no. 1 (March 2012): 39–56.
<http://search.ebscohost.com/login.aspx?direct=true&db=ufh&AN=70169980&site=ehost-live>.
- Barab, Sasha A., Michael F. Young, and JianJuan Wang. "The Effects of Navigational and Generative Activities in Hypertext Learning on Problem Solving and Comprehension." *International Journal of Instructional Media* 26, no. 3 (1999): 283–309.
- Berg, Bruce L. *Qualitative Research Methods for the Social Sciences*. 8th ed. Boston: Pearson, 2012.
- Bezdan, Eniko. "The Influence of Node Sequence and Extraneous Load Induced by Graphical Overviews on Hypertext Learning." *Computers in Human Behavior* 29, no. 3 (May 1, 2013): 870–80.
http://resolver.scholarsportal.info/resolve/07475632/v29i0003/870_tionsabgoohl.xml.
- Boydston, Amber E. *Making the News: Politics, the Media, and Agenda Setting*. Chicago ; London: The University of Chicago
- Charmaz, Kathy. *Constructing Grounded Theory*. 2nd ed. Introducing Qualitative Methods. London ; Thousand Oaks, Calif: Sage, 2014.
- Charters, Elizabeth. 2010. The use of think-aloud methods in qualitative research an introduction to think-aloud methods. *Brock Education : A Journal of Educational Research and Practice* 12 (2).

- Chen, Chaomei and Roy Rada. "Interacting With Hypertext: A Meta-Analysis of Experimental Studies," *Human Computer Interaction* 11, no 2. June 1996.
http://journals2.scholarsportal.info.proxy1.lib.uwo.ca/details/07370024/v11i0002/125_iwhamos.xml.
- Choi, Yun Jung, and Jong Hyuk Lee. "Cross-Cutting Effects of Hypertext Navigation on the Convergence of Attitudes." *Mass Communication & Society* 16, no. 3 (May 2013): 369–90. doi:[10.1080/15205436.2012.691596](https://doi.org/10.1080/15205436.2012.691596).
- Clark, Richard E., and David F. Feldon. "Five Common but Questionable Principles of Multimedia Learning." *The Cambridge Handbook of Multimedia Learning*, 2005, 97–115.
<http://books.google.com/books?hl=en&lr=&id=SSLdo1MLIywC&oi=fnd&pg=PA97&dq=info:lEus8TOQXxcJ:scholar.google.com&ots=uTxdS5Q0Gt&sig=2L4hioFcWGR3AVG6eDXNPiMWEY0>.
- Craik, Fergus IM, and Robert S. Lockhart. "Levels of processing: A framework for memory research." *Journal of verbal learning and verbal behavior* 11, no. 6 (1972): 671-684.
- Crano, William D. "Primacy versus Recency in Retention of Information and Opinion Change." *Journal of Social Psychology - J SOC PSYCHOL*101, no. 1 (1977): 87–96. doi:[10.1080/00224545.1977.9923987](https://doi.org/10.1080/00224545.1977.9923987).
- Crano, William D., and Antonis Gardikiotis. "Attitude Formation and Change." In *International Encyclopedia of the Social & Behavioral Sciences (Second Edition)*, edited by James D. Wright, 169–74. Oxford: Elsevier, 2015.<http://www.sciencedirect.com/science/article/pii/B978008097086824004X>.
- Creswell, John W., ed. *Qualitative Inquiry and Research Design: Choosing Among Five Approaches*. 2 edition. Thousand Oaks: Sage Publications, 2006.

- De Maeyer, Juliette. "THE JOURNALISTIC HYPERLINK" *Journalism Practice* 6, no. 5–6 (October 1, 2012): 692–701. http://resolver.scholarsportal.info/resolve/17512786/v6i5-6/692_tjh.xml.
- DeStefano, D. "Cognitive Load in Hypertext Reading: A Review." *Computers in Human Behavior* 23, no. 3 (n.d.): 1616–41. http://resolver.scholarsportal.info/resolve/07475632/v23i0003/1616_clihrrar.xml.
- Dillon, Andrew, and Ralph Gabbard. "Hypermedia as an Educational Technology: A Review of the Quantitative Research Literature on Learner Comprehension, Control, and Style." *Review of Educational Research* 68, no. 3 (1998): 322–49. <http://rer.sagepub.com/content/68/3/322.short>.
- Festinger, Leon. *A Theory of Cognitive Dissonance*. Stanford University Press, 1962
- Gilbert, Daniel T., Brett W. Pelham, and Douglas S. Krull. "On Cognitive Busyness: When Person Perceivers Meet Persons Perceived." *Journal of Personality and Social Psychology* 54, no. 5 (1988): 733–40. doi:[10.1037/0022-3514.54.5.733](https://doi.org/10.1037/0022-3514.54.5.733).
- Grafton, Carl, and Anne Permaloff. "Hypertext and Hypermedia." *PS: Political Science and Politics* 24, no. 4 (December 1, 1991): 724–30. doi:[10.2307/419416](https://doi.org/10.2307/419416).
- Gwizdka, Jacek. "Searchers Switch Tactics under Increased Mental Load" *Proceedings for the American Society of Information Technology* 50, no. 1 (2013): 1–3. http://resolver.scholarsportal.info/resolve/00447870/v50i0001/1_sstuiml.xml.
- Hailey, David E., and Christine Hailey. "Hypermedia, Multimedia, and Reader Cognition: An Empirical Study." *Technical Communication: Journal of the Society for Technical Communication* 45, no. 3 (1998): 330–42.
- Herman, Edward S., and Noam Chomsky. *Manufacturing Consent: The Political Economy of the Mass Media*. Knopf Doubleday Publishing Group, 2011.
- Himmelboim, Itai. "The International Network Structure of News Media: An Analysis of Hyperlinks Usage in News Web Sites" *Journalism and Mass Communication*

Quarterly 54, no. 3 (August 17, 2010): 373–90.

http://resolver.scholarsportal.info/resolve/08838151/v54i0003/373_tinsonhuinws.xml.

Kawulich, Barbara B. “Participant Observation as a Data Collection Method.” *Forum Qualitative Sozialforschung / Forum: Qualitative Social Research* 6, no. 2 (May 31, 2005). <http://www.qualitative-research.net/index.php/fqs/article/view/466>.

Landow, George P. *Hypertext Parallax : Re-Visions of Culture and Society*. Baltimore: Johns Hopkins University Press, 1992.

———. *Hypertext 2.0*. Rev., amplified ed. *Parallax : Re-Visions of Culture and Society*. Baltimore: Johns Hopkins University Press, 1997.

———. *Hypertext 3.0: Critical Theory and New Media in an Era of Globalization*. JHU Press, 2006.

Madrid, Ignacio R. “The Effects of the Number of Links and Navigation Support on Cognitive Load and Learning with Hypertext: The Mediating Role of Reading Order.” *Computers in Human Behavior* 25, no. 1 (January 1, 2009): 66–75. http://resolver.scholarsportal.info/resolve/07475632/v25i0001/66_teotnotmroro.xml.

McEneaney, John E. “Does Hypertext Disadvantage Less Able Readers?” *Journal of Educational Computing Research* 29, no. 1 (2003): 1–12.

McNamara, Danielle S. “Are Good Texts Always Better? Interactions of Text Coherence, Background Knowledge, and Levels of Understanding in Learning From Text” 14, no. 1 (March 1, 1996): 1–43. http://resolver.scholarsportal.info/resolve/07370008/v14i0001/1_agtabiouilft_1.xml.

Mitchell, Amy. “State of the News Media 2015.” *Pew Research Center’s Journalism Project*. Accessed January 5, 2016. <http://www.journalism.org/2015/04/29/state-of-the-news-media-2015/>.

- Moos, Daniel C. "Setting the Stage for the Metacognition during Hypermedia Learning: What Motivation Constructs Matter?" 70, no. Complete (n.d.): 128–37. http://resolver.scholarsportal.info/resolve/03601315/v70icomplete/128_stsftmhlwcm.xml.
- Mosco, Vincent. *The Digital Sublime: Myth, Power, and Cyberspace*. MIT Press, 2005.
- Nickerson, Raymond S. "Confirmation Bias: A Ubiquitous Phenomenon in Many Guises." *Review of General Psychology* 2, no. 2 (1998): 175–220. doi:[10.1037/1089-2680.2.2.175](https://doi.org/10.1037/1089-2680.2.2.175).
- Niederhauser, Dale S., Ralph E. Reynolds, Donna J. Salmen, and Phil Skolmoski. "The Influence of Cognitive Load on Learning from Hypertext." *Journal of Educational Computing Research* 23, no. 3 (October 1, 2000): 237–55. doi:[10.2190/81BG-RPDJ-9FA0-Q7PA](https://doi.org/10.2190/81BG-RPDJ-9FA0-Q7PA).
- Olmstead, Kenneth, and Elisa Shearer. "Digital News — Audience: Fact Sheet." *Pew Research Center's Journalism Project*. Accessed July 3, 2015. <http://www.journalism.org/2015/04/29/digital-news-audience-fact-sheet/>.
- Petty, Richard E., and John T. Cacioppo. *Communication and Persuasion: Central and Peripheral Routes to Attitude Change*. Springer Series in Social Psychology. New York: Springer-Verlag, 1986.
- Prensky, Marc. "Digital natives, digital immigrants part 1." *On the horizon* 9, no. 5 (2001): 1-6.
- Sandberg, Kate E. "Hypertext: Its Nature and Challenges for College Students" *Journal of College Reading and Learning* 44, no. 1 (September 1, 2013): 51–71. http://resolver.scholarsportal.info/resolve/10790195/v44i0001/51_hinacfcs.xml.
- Sayer, R. Andrew. *Method in Social Science: A Realist Approach*. Hutchinson University Library. London: Hutchinson, 1984.

- Schwartz, Neil H., Christopher Andersen, Namsoo Hong, Bruce Howard, and Steven McGee. "The Influence of Metacognitive Skills on Learners' Memory of Information in a Hypermedia Environment." *Journal of Educational Computing Research* 31, no. 1 (July 1, 2004): 77–93. doi:[10.2190/JE7W-VL6W-RNYF-RD4M](https://doi.org/10.2190/JE7W-VL6W-RNYF-RD4M)
- Seidman, Irving. *Interviewing as Qualitative Research: A Guide for Researchers in Education and the Social Sciences*. 3rd ed. New York: Teachers College Press, 2006.
- Shapiro, Amy M. "Promoting Active Learning: The Role of System Structure in Learning from Hypertext." *Hum.-Comput. Interact.* 13, no. 1 (March 1998): 1–35. doi:[10.1207/s15327051hci1301_1](https://doi.org/10.1207/s15327051hci1301_1).
- Song, Indeok. "Interactivity and Political Attitude Formation: The Elaboration Likelihood Model of Interactive Media (ELMIM)." Ph.D., Indiana University, 2008. <http://search.proquest.com.proxy1.lib.uwo.ca/docview/288222872/abstract>.
- Stray, Jonathan. "Linking by the Numbers: How News Organizations Are Using Links (or Not)." *Nieman Lab*. Accessed July 9, 2015. <http://www.niemanlab.org/2010/06/linking-by-the-numbers-how-news-organizations-are-using-links-or-not/>.
- Uscinski, Joseph E. *The People's News: Media, Politics, and the Demands of Capitalism*. New York: New York University Press, 2014.
- Verhoeven, Ludo. "Cognitive Load in Interactive Knowledge Construction." *Learning and Instruction* 19, no. 5 (October 1, 2009): 369–75. http://resolver.scholarsportal.info/resolve/09594752/v19i0005/369_cliikc.xml.
- Zumbach, J. "Cognitive Load in Hypermedia Reading Comprehension: Influence of Text Type and Linearity." *Computers in Human Behavior* 24, no. 3 (n.d.): 875–87. http://resolver.scholarsportal.info/resolve/07475632/v24i0003/875_clihrciottal.xml.

Zhu, Erping. "Hypermedia Interface Design: The Effects of Number of Links and Granularity of Nodes." *Journal of Educational Multimedia and Hypermedia* 8 (1999).

Zipf, George Kingsley. *Human Behavior and the Principle of Least Effort*. Vol. xi. Oxford, England: Addison-Wesley Press, 1949.

Appendices

Appendix A: List of Walled Garden Articles

START ONE: Canadian Oil Patch May be Out of the Game if Pipelines Not Built

http://business.financialpost.com/news/energy/canadian-oilpatch-may-be-out-of-the-game-if-new-pipelines-not-built-capp?_lsa=f915-e087

Mainly argument about the economy of oil sands—ability of the sands to grow and continue to bring in money, argues that adding pipelines will ensure the continued existence of oil sands for jobs and economic growth. Mentions job loss, which might be more valuable to expand argument for pipeline use.

START TWO: Tailings Ponds a Toxic Legacy of Alberta’s Oil Sands

<http://www.thestar.com/news/atkinsonseries/2015/09/04/tailings-ponds-a-toxic-legacy-of-albertas-oilsands.html>

Provides information about the impact of the tar sands, with a particular focus on the impact on birds and the biodiverse impact they have on first, other predators and even humans, as well as seepage of the tailing ponds into the Athabasca and the Beaufort sea.

Bill Nye Visits Alberta Oil Sands, “An Extraordinary Exploitation of the Environment”

<http://aptn.ca/news/2015/09/01/bill-nye-the-science-guy-visits-tar-sands-extraordinary-exploitation-of-environment/>

Bill Nye on the tar sands—Overview, mentions environment, first nations, and boom and bust cycle of oil—has expert/public personality for persuasiveness, might lead to positive affect in peripheral route.

Why We Need Keystone XL

<http://www.cnn.com/2012/02/23/opinion/hoeven-keystone-pipeline-defense/>

Argument for why the USA needs the Keystone XL Pipeline, particular focus on the economics of it, and the decreased environmental impact from shipping oil between Canada and the USA, rather than to China.

Oilfield theft, Vandalism up Amid Crude Downturn

http://business.financialpost.com/news/energy/oilfield-theft-vandalism-up-amid-crude-downturn-people-get-laid-off-they-get-mad?_lsa=f915-e087

Argues that the increased vandalism of equipment at oil sands is due to laid off workers having nothing to do. Good appeal to emotion and demonstration of the human side of job losses.

Canadian Oil Pipelines and Infrastructure of National Importance

<http://beaconnews.ca/blog/2015/09/oil-pipelines-infrastructure-of-national-importance/>

Argues that oil pipelines are a part of the connectivity that makes Canada a nation—pulls on an ideological, as well as economic argument, and argues that the NEB makes good and well researched decisions that should be trusted.

Stop the Keystone Pipeline Before it’s too Late.

<http://www.cnn.com/2012/02/22/opinion/turner-keystone-pipeline/index.html>

Contrast to Hoeven’s Keystone defense, argues why Keystone XL is bad for the USA, based on primarily on environmental concerns. Original article is full of hyperlinks to source material—some should be retained or repurposed.

Keystone Job Claims: A Bipartisan Fumble

https://www.washingtonpost.com/blogs/fact-checker/post/keystone-pipeline-jobs-claims-a-bipartisan-fumble/2011/12/13/gIQAwxFisO_blog.html

Break down of the number of jobs that Keystone might create—argues that estimates are way too high, and include jobs for choreographers and speech therapists, which are probably not going to be created by building a pipeline. Argues that any increases in jobs might also be outweighed by environmental destruction and cleanup costs.

Brad Wall urged Oil Industry to Fight Celebrity Critics with Facts

<http://www.canadianbusiness.com/business-news/saskatchewans-wall-urges-oil-industry-to-fight-celebrity-critics-with-facts/>

Argues that the “foes” of the oil industry are “great scientific minds like Neil Young and Daryll Hannah”, and that the oil industry needs to be the “purveyors of truth” in response to these celebrity critics.

Why BC First Nations Oppose the Northern Gateway Pipeline

<http://www.thestar.com/news/atkinsonseries/2015/08/28/why-bc-first-nations-oppose-the-northern-gateway-pipeline.html>

Summarizes the Key Issues for the First Nations people with the Northern Gateway Pipeline. Focus on biodiversity and environmental issues

First Nations Demand Halt to Energy East Review over Funding Cut

<http://www.cbc.ca/news/canada/new-brunswick/neb-energy-east-intervener-funding-1.3236504>

Explains that funding for research against the pipeline was cut from the National Energy Board review process, and that first nations groups in New Brunswick are protesting that funding cut and calling for a halt to the review process until funding is restored.

Clinton’s Opposition Doesn’t Matter; Crude Oil will Find a Way to Market

<http://www.winnipegfreepress.com/opinion/editorials/Oilsands-crude-will-follow-market-328937451.html>

Argues that crude oil will continue to make its way to market as long as there is a demand for it, and that it is environmentally sound to build pipelines, rather than transporting the oil via trains or trucks and creating further pollution.

Appendix D: Complete Instructions to Participants

Complete Testing Schedule

Knowledge of the Oil Sands Interview: (Verbal, 10 min, audio recorded)

Q1: For this study, I'm going to be asking you to read news articles about the oil sands in Alberta and Saskatchewan, and the possibility of creating several new pipelines as a part of that industry. Can you tell me what, if anything, you know about the oil sands and the creation of pipelines to transport oil?

Probes: anything else, etc?

Q2: Do you think we should do in the future with the oilsands?

Probes: Should we expand them, stop using them, that sort of thing?

SECTION TWO: THINK-ALOUND PROTOCOL (Verbal, 25 min, audio recorded)

Think-Aloud Protocol Instructions

The major part of this study is going to be you learning about the oil sands by reading through several online newspaper articles. When you've finished, I'm going to ask you to explain what you think we should do with the oilsands and pipelines in the future and why so I want you to keep that in mind while you are reading. All the articles are taken from already-published news sources, and are linked together by hyperlinks, so you can follow up on ideas or get more information. They are from a variety of time periods, and when you think about this material, I want you to think about it in a kind of broad, long term manner—what we should do in the future of oil sands production and energy efficiency, not just in the next year or so. There are twelve articles, so I don't expect you to read all of them, or even all the articles—you should feel free to skip around, or go through them however you want to. I'm going to ask you to stop reading after 25 minutes, but you can stop reading before that if you feel like you are well-informed about the issues, or when you want to. The way the articles are set up, there are hyperlinks within the articles themselves, which I encourage you to use if you would like, but there are also links at the bottom of the articles which you can use to follow up on certain ideas or things you are concerned about, which are organized more or less by topic, although obviously there is some overlap between topics.

While you're reading, I am going to ask you to explain to me what you're thinking, and why you're making the decisions about which articles to read, that sort of thing. You don't have to read aloud, but anytime you have a thought or a reaction to something I would like you to say it aloud. Let me know about anything you are curious about, or maybe even what you would do in response to things if you weren't you know, here on campus with me, but at home reading this on your own computer. Does that make sense?

I will be sitting beside you while you read, and I might ask you questions about things you say or do while you're reading after you have finished. Is that alright?

Thank you. Do you have any questions?

SECTION THREE: POST-TEST INTERVIEW (Verbal, 20 min, Audio Recorded)

Semi-structured Interview Schedule

Q1: Has your opinion about the oil sands changed after reading these articles? (if response is yes, ask Q2. If not, move onto Q3.)

Q2: How has your opinion changed?

Q3: What do you think we should do about the oil sands in the future and why?

Probes: If someone were to tell you they believed [position that is different from the participant's] how would you persuade them to see things from your point of view?

And why is that? Why do you think that? Could you explain that a little bit more please?

Q4: Follow up on questions that arose during reading and think-aloud portion.

Q5: Is anything else about the articles you read here that you didn't mention already that you would like to tell me?

Appendix G: Ethics Approval



Research Ethics

Western University Non-Medical Research Ethics Board NMREB Delegated Initial Approval Notice

Principal Investigator: Jacquelyn Burkell

Department & Institution: Information and Media Studies\Faculty of Information & Media Studies, Western University

NMREB File Number: 107550

Study Title: Finding your Way: Opinion formation and navigation through online news media

Sponsor:

NMREB Initial Approval Date: December 23, 2015

NMREB Expiry Date: December 23, 2016

Documents Approved and/or Received for Information:

Document Name	Comments	Version Date
Instruments	Complete list of articles for Walled Garden	2015/10/26
Letter of Information & Consent	Letter of Information and Consent	2015/12/11
Instruments	Complete Interview and Instructions Schedule	2015/12/09
Advertisement	Poster	2015/12/09
Instruments	Article Examples	2015/10/16

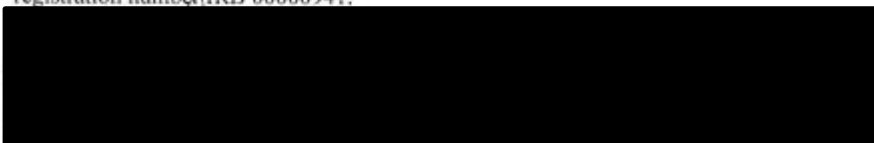
The Western University Non-Medical Research Ethics Board (NMREB) has reviewed and approved the above named study, as of the NMREB Initial Approval Date noted above.

NMREB approval for this study remains valid until the NMREB Expiry Date noted above, conditional to timely submission and acceptance of NMREB Continuing Ethics Review.

The Western University NMREB operates in compliance with the Tri-Council Policy Statement Ethical Conduct for Research Involving Humans (TCPS2), the Ontario Personal Health Information Protection Act (PHIPA, 2004), and the applicable laws and regulations of Ontario.

Members of the NMREB who are named as Investigators in research studies do not participate in discussions related to, nor vote on such studies when they are presented to the REB.

The NMREB is registered with the U.S. Department of Health & Human Services under the IRB registration number IRB 00000941.



This is an official document. Please retain the original in your files.

Appendix H: Recruitment Poster



PARTICIPANTS NEEDED FOR RESEARCH ON READING NEWS MEDIA AND OPINION FORMATION, CHANGE, AND REINFORCEMENT

We are looking for volunteers between the ages of 18-24 to take part in a study of reading and navigating the news in online environments.

If you are interested and agree to participate you would be asked to read news stories while explaining your thoughts and reactions to the story and participate in an interview.

Participants will be entered in a draw to win a \$30 Western Hospitality Services or Amazon Gift Card.

Your participation would involve 1 session of approximately an hour.

For more information about this study, or to volunteer for this study, please contact:

Charlotte Britten
Faculty of Information and Media Studies

[REDACTED] or
Email: [REDACTED]

Appendix I: Letter of Information and Consent



Letter of Information and Consent

Finding your Way: Opinion Formation and Navigations through Online News Media

Letter of Information and Consent – All Participants

Principal Investigator: Jacquelyn Burkell [REDACTED]

MA Researcher: Charlotte Britten [REDACTED]

1. Invitation to Participate

You are being invited to participate in this research study about the effects of reading online news articles connected by hyperlinks. You are being invited to participate because you are between the ages of 18 and 24 and thus are a member of an age demographic who primarily uses online sources for news.

2. Why is this study being done?

The purpose of this study is to investigate how individuals make choices about, respond to, and remember information from hyperlinked news stories, and how this relates to opinion formation, change and reinforcement. This means that we are interested in seeing what links you choose to follow or what articles you read, and asking you to explain why you are making these choices. This study will help us understand how people read hyperlinked online news stories, and how this format for news influences understanding and opinion.

3. How long will you be in this study?

You are being asked to participate in one research session. It is expected that the session will last for approximately one hour.

4. What are the study procedures?

If you agree to participate you will be asked first to fill out a brief written questionnaire to gather demographic information and information relating to your news consumption. You will then be asked what you know about the oil sands and your opinion on them in a verbal interview which will be recorded. You will be asked to read through a collection of articles about the oil sands, making navigational choices about what to read next.

While reading, you will be asked to voice your thoughts or responses about these articles aloud. These comments will also be recorded via an audio device, and your

navigational choices will be viewed and noted by the researcher, who will be sitting next to you and looking at the screen over your shoulder.

After you have finished reading through these articles, your opinion on the oil sands and what information you use to support that opinion will be assessed through a semi-structured interview. At this point, the researcher will also ask any questions about your navigational choices or comments which were made while reading that were not fully explained by what you said aloud.

All verbal interviews will be audio recorded, as will the comments you make while reading. Willingness to be recorded is necessary for participation.

5. What are the risks and harms of participating in this study?

There are no known or anticipated risks or discomforts associated with participating in this study.

6. What are the benefits of participating in this study?

You may not directly benefit from participating in this study, but information gathered may provide benefits to society by contributing to knowledge about engagement with, and understanding of, news media.

7. Can you choose to leave the study?

You are free to withdraw from this study at any time without negative consequences. If you decide to withdraw from the study, you have the right to request the withdrawal of information collected about you. If you wish to have your information removed please let the researcher know.

8. How will your information be kept confidential?

The data collected as part of this research will remain confidential and accessible only to the above-mentioned investigator and supervisor of this study. If the results are published, you will in no way be identifiable in the overall data set. All names will be anonymized.

You should be aware that your comments, anecdotes, or direct quotations from your interview may be a part of the published research. All audio recordings collected from interviews will be kept only until transcribed by the MA student researcher, and then will be destroyed, approximately one week after completion of your interview.

Information collected from participants will be kept for a minimum of five (5) years on a secure server, at which point these documents will be securely destroyed. Only the MA student researcher and Principal Investigator will have access to these recordings at any time, though representatives from The University of Western Ontario's Non-Medical Research Ethics Board may require access to your study-related records to monitor the conduct of the research. While we do our best to protect your information there is no

guarantee that we will be able to do so. If data is collected during the project which we are required to report by law, we have a duty to report.

9. Are participants compensated to be in this study?

Participants will be entered in a draw for a \$30 Western Hospitality Services or Amazon Gift card. If participants choose to withdraw from the study, they will still be eligible for the draw.

10. What are the rights of participants?

Your participation in this study is voluntary. You may decide not to be in this study. Even if you consent to participate you have the right to not answer individual questions or to withdraw from the study at any time. If you choose not to participate or to leave the study at any time it will have no effect on your academic standing.

We will give you any new information that is learned during the study that might affect your decision to stay in the study.

You do not waive any legal right by signing this consent form

11. Whom do participants contact for questions?

If you have questions about this research study please contact Charlotte Britten, [REDACTED] [REDACTED] or Jacquelyn Burkell ([REDACTED] [REDACTED]).

If you have any questions about your rights as a research participant or the conduct of this study, you may contact The Office of Research Ethics [REDACTED] email: [REDACTED]

This letter is yours to keep for future reference.

Consent

Study: Finding your Way: Opinion Formation and Navigations through Online News Media

Researchers: Charlotte Britten, Jacquelyn Burkell (Principal Investigator)

I have read the Letter of Information, have had the nature of the study explained to me and I agree to participate. All questions have been answered to my satisfaction.

You do not waive any legal rights by signing this consent form.

Participant's Name: (Please Print) _____

Participant's Signature: _____

Date: _____

Person Obtaining Informed Consent: _____

Signature: _____

Date: _____

Appendix J: Walled Garden Structure

	1	2	3	4	5	6	7	8	9	10	11	12	Inlinks	Legend:	
1	0	1		1								1	1	Oil Patch Out	1
2	1	0					1						1	Theft, Vandalism	2
3	1		0	1		1	1		1	1			1	National Importance	3
4			1	0	1			1				1	1	Keystone Pipeline Defence	4
5			1		0				1				1	Brad Wall	5
6		1			1	0				1			1	Crude Oil will Follow Market	6
7						1	0		1	1			1	Tailing Ponds	7
8	1			1		1	1	0					1	The Case against Keystone	8
9	1		1		1		1		0	1				Energy East	9
10			1	1					1	0			1	Northern Gateway	10
11		1						1					0	Keystone Jobs	11
12					1			1					0	Bill Nye	12
Outlinks:	4	3	4	4	4	3	4	3	4	4	3	4	44	Link Summary	
														Anti to Anti	11
														Anti to Pro	11
														Pro to Anti	11
														Pro to Pro	11

Curriculum Vitae

Name: Charlotte Britten

Post-secondary Education and Degrees: Mount Allison University
Sackville, New Brunswick, Canada
2010-2014, B.A.

The University of Western Ontario
London, Ontario, Canada
2014-2016 M.A.

Honours and Awards: Dr. Karen G Nicholson Prize
Mount Allison Psychology Department
2014

Related Work Experience: Graduate Teaching Assistant
The University of Western Ontario
2014-2016

Teaching Assistant
Mount Allison University
2012-2014