Concealing and Revealing:

Information Design to Strengthen Civic Literacy

in an Age of Digital Communication

by

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Submitted to OCAD University in partial fulfillment of the requirements

for the degree of Master of Design in Interdisciplinary Master's in Art, Media and Design

Toronto, Ontario, Canada, 2021

Abstract

This thesis work responds to emerging issues in media and civic awareness in Canada, exploring how design can be used to highlight, examine and expose characteristics of the digital space in order to enhance young citizens' media literacy. As the opening chapters will establish, younger Canadians are experiencing a unique combination of factors that render them insufficiently prepared to participate as digital citizens. These issues are compounded by digital threats to democratic values such as the rise in manipulative or propagandistic content, as well as intellectual silos created by algorithmic filtering. The title of the thesis, "concealing and revealing" speaks to our relationship with the digital space that is all at once present, immediate and yet, invisible, and elusive. My creative work aims to illuminate the invisible power dynamics perpetuated by digital tools using information design and data visualizations, presented through a large sculptural installation and a series of illustrated notebooks. The projects' research focuses on teens and young adults, but the outcomes provide information that is pertinent to citizens of all ages. The projects rely on critical discourse analysis, semiotics and practice-led approaches to research. The theoretical framing of the projects apply Marshall McLuhan's media theories to explore how we as a society may begin to evaluate our political experience in the digital age, in order to better understand the lasting impacts on citizenship and liberal democracy.

Acknowledgements

Thank you to my advisors, Annette Blum and Dr. Martha Ladly, who shaped my experience at OCAD University by sharing their expertise, advice, and time. Annette, thank you for all of the wonderful help that you provided, for your attention to detail and for your continued support throughout this process. Thank you for helping me to shift the content and delivery of this thesis in light of the pandemic and for your continued encouragement and motivation during this very challenging time. It was a wonderful experience working with you and I'm very appreciative of how much energy and attention you put into this thesis work. Martha, thank you for staying on with this project during your sabbatical and for the incredible experience of the Florence Contemporary program and my independent study. I am so very grateful for those opportunities and for your guidance throughout my time in the IAMD program.

To my parents, thank you for a lifetime of sharing your wisdom and for teaching me the importance of democracy and education. Thank you for bringing me into the conversation, even as a child. Thank you for the push and many pep talks needed to get through this thesis. To my Dad, whose work inspired this project, I can't thank you enough for all of your support throughout this process. I've always been so impressed and interested in the work that you did in Ukraine and am so grateful to have had this chance to learn from you. To my mom, thank you for sharing your original marked up Marshall McLuhan texts and for the very important reminders that helped me to get through the finish line. Your work and character are a constant inspiration to me.

Finally, thank you to the amazing friends, and colleagues who shared ideas, checked in, attended shows, and generally cheered me on. A special thank you to Dave for being a particularly great cheerleader in this final stretch.

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Preface: Contrasts in Political Engagement

I first became interested in education about democracy because of work that my father, a political scientist at Queen's University, was undertaking in the 1990s. After Ukraine broke from Russia, reformist leaders of the new country believed that democracy could only succeed if its citizens understood the rights and responsibilities of democratic citizenship. To achieve this, they wanted to make democracy a required subject in their universities, technical colleges and secondary schools and my Dad was asked to help them. He directed a program to introduce the study of democracy into the education system of Ukraine, and worked on this project intensively for almost two decades.

During that same period, I attended elementary and then secondary school in Ontario, where this type of curriculum didn't yet exist. As I will discuss further in Chapter 1, democratic and civic education in Canada is often integrated as an addendum to history courses. Ontario introduced a new high school civics course in the early 2000s, but I narrowly missed its introduction and as a result did not have any formal civics education in high school.

At home, my parents discussed politics frequently and the house was often filled with visiting colleagues or students. I was exposed to a political education through these conversations and experiences but, like many teenagers, I had other priorities. While I took some interest in politics, learning about the structures and associated processes of our parliamentary system seemed both overwhelming and tedious. I was more interested in the emotional appeal of politics and saw that excitement reflected in the energetic conversations between my parents,

particularly those that marked milestones of the program in Ukraine. These experiences laid the foundation for what would later become a sincere interest in democracy and education.

At the age of 18, I voted for the first time, but very few of my peers voted. During this same period, disengagement among young Canadian voters was becoming widely acknowledged (Howe 3).

I saw an opportunity for my work to overlap with that of my father's work when I was in University taking a design course on typography and book layout. As a major project in the course, I created a book cover concept for one of my father's textbooks about democracy in Ukraine. The book's subtitle referred to a balance of rights and responsibilities. To represent this idea, my design merged and abstracted the Cyrillic characters in the title to show a balance of blue and yellow, the colours in the Ukrainian flag.

A few years later, I designed an e-book for my father's Ukrainian project that included a synthesis of outcomes of the project conveyed through text as well as a series of embedded videos and interviews. Lines and shapes in the book again represented structure and balance. Those shapes were broken, but were arranged with a sense of directional movement and flow that was designed to guide the viewer's eye through the text while referencing progression and forward momentum in a political sense.

Before beginning the designs for these projects, I researched existing texts and began to identify themes in the ways in which the concept of democracy is visually presented to young

people. Democracy is consistently represented with illustrations of raised hands, ballot boxes or hordes of colourful, silhouetted citizens (see fig. 1). These images seem to express simplistic perspectives of democracy that exists only in the act of voting or in living harmoniously with our neighbours. This type of imagery does not represent the need for consistent action, participation and engagement that are essential to maintaining healthy democracies.

Fig 1. Examples of the type of imagery that is commonly used to express the concept of Democracy. "Democracy Vectors." Shutterstock, htttps://www.shutterstock.com/search/democracy+vector. Accessed 1 May 2021.

From these experiences and initial research, I saw the potential to use design as a mechanism to enhance civic engagement and democratic knowledge. This is where my research at OCAD University began.

Introduction

Design can play a vital role in clarifying and disseminating information; my thesis explores a variety of approaches to this through a sculptural installation and a series of illustrated books. The theoretical framing of the project looks to Marshall McLuhan's media theories that outline the difficulty and importance of understanding our contemporary media environment in order to anticipate its impacts on us—socially and culturally (McLuhan and Fiore 26).

The sculptural work is a visual representation of the volume of information exchanged on social media within a single minute. It physically represents the uploading of 500 000 comments, 293 000 statuses, and 450 000 photos on Facebook; 400 hours of video on YouTube; and 300 000 tweets on Twitter (Singer and Brooking 58). This data is represented in ten to one ratio through designed laser cut graphics made of mirror and acrylic. Strung together in a canopy and suspended from the ceiling over rows of children's school desks, the individual icons blend and become abstracted at a distance. Once the viewer enters the piece, walking between the rows of desks, the content of the icons becomes more readable and the viewer can begin to access the information held there; however, the mirrored surface impedes a clear reading of each icon, forcing the viewer to look past their own reflection to read the contents of the work. This act of concealing and revealing simulates our relationship with the digital space that is all at once present, immediate and yet elusive.

While the sculptural work withholds information from the viewer, the notebooks aim for clarity. Through a combination of infographics, illustrations and short blocks of text, the notebooks provide a survey of issues related to civic literacy and digital citizenship. Each book

outlines emerging issues related to online media use and offers practical solutions for beginning to resolve them. For example, the Science notebook focuses on the spread of mis-information, identifying distinctions among "species" of bad actors who are responsible for disseminating that information. The text provides insights and definitions of trolls, sock puppets, bots, and cyborgs, but it also provides practical "formulas" that can be used to moderate our own behaviour and to recognize the presence of these bad actors in our online interactions.

The classroom environment is referenced through the organization of content according to school subject and covers which are designed to look like the exercise books that are commonly used in elementary and secondary schools across the country. The books are designed to appeal to teens and young adults, but provide information that is pertinent to citizens of all ages.

The antique school desks and the books, with their familiar pastel covers, have a nostalgic appearance that is significant to the project's theoretical framing. The reference to another time is designed to help the viewer engage with the broader ideas without the constraints of contemporary aesthetics or without a digital apparatus.

As I will describe in the subsequent chapters, the focus of my work has changed shape significantly from its initial focus, but the objectives have remained unchanged; the project seeks to uncover ways to use design to communicate political knowledge. The thesis has become focused on media literacy and technology as aspects of civic education. Across all of the literature that I have studied, experts assert that education in these subjects is imperative to the

health and stability of liberal democratic systems (Singer and Brooking; Diamond; Wineburg et al.). My work aims to highlight the current issues, examining and exposing the concealed and complex aspects of the digital space. In doing so, the work proposes ways in which design can be used to enhance awareness in these areas.

As a Canadian, I am primarily concerned with how these issues impact Canadian culture and democratic engagement. My research on education looks specifically at Ontario's high school curriculum, since it is the only province that has a required civics course (Morden et al.). A great deal of valuable information is emerging from the United States and while there are significant distinctions between our political systems, the texts that I refer to examine shared concepts of liberal democracy and its relationship to education and technology. In addition, much of the U.S. scholarship is more up-to-date than similar Canadian work and the larger demographic samples offer insights into how trends might continue to develop here in Canada.

It is also important to examine these issues from a global perspective, because social media and technology allow us to communicate, advertise and persuade on a global scale. As a result, the impacts of media literacy on liberal democracy have become a global issue. In fact, in recent years, many countries have started to impose regulations around the use of digital tools that have forced major tech companies to adjust the ways in which they store and disseminate information to and about their users (Diamond 238). The thesis touches on some of these issues, but will remain predominantly focused on the broad effects of media literacy on democracy and on opportunities to enhance awareness through design.

Chapter 1 contextualizes the issues and the design work by reviewing literature about civic engagement and education; chapter 2 describes these issues in greater depth while outlining the project's theoretical framing; chapter 3 describes the design work itself; chapter 4 describes the project's research methodology as well as earlier works; and chapter 5 reflects on the outcomes of this research and concludes with a discussion of its relationship to our current social and political environment. This chapter has a specific focus on the pandemic and the relationship between media literacy and public health.

As a point of style, I've used the word "we" throughout the text to refer to the shared experience of citizens in a liberal democracy. The term "we" is frequently applied in this context in many of the sources that I have referenced in my research.

Chapter 1: Literature Review and Background

Political Disengagement and Its Causes

I started this project by considering three questions: (i) What factors lead to political disengagement among young citizens? (ii.) Is disengagement linked to a lack of education or interest in democracy? (iii) How might design be used to promote civic literacy and political engagement?

1.1 Youth and Civic Engagement

Civic literacy is central to the issue of political engagement, because people who possess civic literacy are more likely to vote, less likely to be swayed by divisive campaign tactics, and apt to be more tolerant of other people's political views (Morden et al. 6). Creating the conditions for civic literacy requires a multifaceted approach that connects formal education and socialization. In addition, today's democracies are faced with new challenges that require an increased focus on improving digital literacy and citizenship (Diamond 248).

Through my initial research, I found that recent studies have shown an encouraging increase in young Canadians' civic participation. In the 2015 Canadian federal election turnout by voters age 18-24 and 25-29 was up from the 2011 election by, respectively, 67% and 70% from 55% and 59% and remained fairly constant in 2019, with an increase of one percentage point for each group (Elections Canada, "Voter Turnout by Age Group"). Also surveys of more than 4,000 voters before the 2019 election by the Samara Centre for Democracy found that "young people are among the most active participants in Canada's civic and political

life. They talk about politics more than anyone, are present in the formal political sphere, respond through activism, and are leading their communities through civic engagement" (Callista et al. 4).

Despite the findings of these reports, civic illiteracy is still prevalent across the country and it bears noting that these increases are compared with a steady, thirty-year decline in political engagement among young citizens (Callista et al. 4).

1.2 The State of Civic Education in Canada

For many years, public education curriculum across the country has faced scrutiny for its failure to adequately prepare students to participate as engaged citizens. Political scientist Paul Howe describes the problem as resulting from a "lack of curriculum materials, the absence of clear teaching objectives, and a failure to provide adequate training for teachers" (Howe 274). Civics curriculum is currently mandated by each province, but Howe suggests that federal leadership might help to create a more unified, advanced curriculum (274).

Across the country, provincially directed civics education is buried in existing curriculum related to history and social studies (Morden et al.). Ontario is the only province currently offering a dedicated half-credit course on civics that students must take in tenth grade; however, the efficacy of this course remains unclear. Nearly twenty years after its implementation, Elections Canada reports that turnout among 18-24 year old voters in Ontario has stayed largely the same (Hewa). Other troubling findings indicate that course instructors were teaching incorrect information about the functions of different institutions of government (Smith, Dale

16). Additional shortcomings of the current Ontario curriculum are demonstrated in the lack of focus on both democracy and on the more holistic concept of civic literacy (Ontario Ministry of Education 141).

In 2012, CBC reported that 74% of students considered the civics course to be "a waste of time". Ontario grade 12 student, Kareem Ibrahim, expands on this saying, "we learn about the House of Commons, how many people sit there and how often a year they meet, but these details don't add to our knowledge of how we can get involved politically...the way they teach it is old-fashioned" (CBC).

Several years later, attitudes towards the civics course seemed largely unchanged. In a 2018 article in the Toronto Star, Ontario student Dasha Metropolitansky expressed similar concerns, saying that the curriculum failed to provide adequate teaching in practical aspects of participation. Despite being "politically minded" and newly eligible to vote, Metropolitansky did not know how to do so. Her comments echo Ibrahim's: "[The civics course] talks about the history of Canada and its electoral system, the past prime ministers, but it does very little to talk about the future, how students can get involved, the advocacy parts of civics" (Hewa).

What Ibrahim and Metropolitansky are describing is how the Ontario civics curriculum focuses heavily on Institutional Knowledge, which constitutes just one of four quadrants of civic literacy as they are defined by The Samara Centre for Democracy. The dimensions of civic literacy are identified as Institutional Knowledge or knowledge relating to the functions of government; Political Ability in relation to voting and participation; Topical Knowledge of

policy issues and current events; and Media Literacy or the ability to analyze news sources and identify biases (Morden et al. 5) (see fig. 2).

> **Four Dimensions of Civic Literacy**

KNOWLEDGE	APPLICATION
Institutional Knowledge	**Political Ability**
• Democratic institutions and processes • How political power dynamics work in society • The historical evolution of Canada	• Navigate political participation • Know where to go in government if problems arise
Examples: the three branches of the state; the function of political parties; the methods by which public leaders are elected.	**Examples**: voting; political actions like protesting; writing to elected leaders; engaging with appropriate government agencies; using media to advance a cause.
Topical Knowledge	**Media Literacy**
• Issues and current events • Policy discussions • Awareness of parties' positions	• Analyze and process information from the Internet and media • Seek out and evaluate original sources
Examples: knowing who the premier or prime minister is; awareness of the public policy issues in play; following current affairs.	**Examples**: recognizing fake news; processing new information and evaluating existing beliefs; identifying bias.

Fig. 2. Diagram of four quadrants of civic literacy as presented by
Samara Centre for Democracy. Samara Centre for Democracy, Investing in
Canadians' Civic Literacy, Morden et al.

In addition to its focus on Institutional Knowledge, the Ontario civics curriculum also provides some training in Political Ability and Topical Knowledge. The brevity of the course and the fact that it is taught two years before students are eligible to vote could explain some of its perceived shortcomings. Perhaps more problematically, the course has very little content related to the last quadrant of civic literacy—the one that is arguably the most relevant area to its students—media literacy (Ontario Ministry of Education 141). The curriculum guidelines mention social media, but since its latest version was developed in 2013, it cannot possibly adequately address civic issues associated with digital technology that have emerged so rapidly in recent years (Ontario Ministry of Education 141).

1.3 Digital Citizenship and Civic Education

Today, experts in many liberal democracies are insisting that education take a more progressive approach, focusing on new and emerging forms of democratic engagement and digital citizenship (Diamond 248). U.S. defense experts P.W. Singer and Emerson T. Brooking encourage revised approaches to education curriculum in their book, *LikeWar: The Weaponization of Social Media.* They propose a model that emphasizes "information literacy", warning that "[this is] no longer merely an education issue but a national security imperative" (Singer and Brooking 263). They suggest that, in addition to courses on critical thinking and civic responsibility, students should play with image-manipulating software and be exposed to fake headlines, thereby learning to discern reality from the deceptive fictions that they may encounter online (263).

A 2019 study from Stanford University found that, among American students surveyed, levels of media literacy and what they call 'civic online reasoning' are alarmingly low. Students were asked to perform a series of tasks which would determine their capacity to discern the credibility of information that they were accessing online. Two-thirds of students were unable to tell the difference between a news story and a sponsored advertisement, and 96 percent of students did not question the veracity of claims about climate change published on a fossil fuel industry website (Wineburg et al. 3). In another test, just under half of the students rejected the credibility of a fake Facebook video about ballot stuffing, and less than nine percent could provide a coherent rationale for believing it to be untrue (16).

The Stanford research group produced recommendations for revised curriculum that might more adequately prepare students in civic online reasoning. They identify problems with the checklist approach that is commonly used as a foundation for digital curriculum. That checklist teaches students to examine the currency, relevance, authority, accuracy, and purpose of the websites that they are accessing and uses the acronym CRAAP. It focuses on assessing individual sites, but does teach students the more comprehensive methods used by fact checkers who read laterally across the broader web (27). The Stanford group concludes their study by outlining a need for more extensive research-based approaches to digital education, writing that "educational systems move slowly. Technology doesn't. If we don't act with urgency, our students' ability to engage in civic life will be the casualty" (27).

1.4 Civic Engagement and Socialization

Just as voting is only one aspect of active citizenship, formal education in civics only constitutes one component of a young citizen's learning experience (Howe 4). As historian and journalist Yoni Applebaum points out, it is important to consider that democratic practices are not innate to the human condition, but they are habits formed through practice. A combination of formal education and socialization is required in order to effectively instill democratic habits and to prevent political disengagement (Applebaum 75).

Over the past century, these habits were practiced through participation in membership groups and community organizations that often relied on a democratic model, holding elections and following a charter. But as more people congregate online, fewer have been participating in these groups. Appelbaum correlates this decline in participation with the deterioration of the

democratic model. "As young people participate less in democratically run organizations, they show less faith in democracy itself" (76). In fact, in a study conducted in 2011, about a quarter of American Millennials said that democracy was a "bad" or "very bad" way to run a country, and that it was "unimportant" to choose leaders in free and fair elections" (76).

That sense of apathy and distrust cannot be addressed through traditional classroom teaching alone. Practice and participation has proven to be a much more effective method for teaching students the value of their role in the democratic process. Appelbaum cites data which shows that greater knowledge of civics among high-school seniors correlated with a two percent greater likelihood of voting in a presidential election eight years later, while active participation in extracurricular activities correlated with 141 percent increase" (77).

Canadian political scientist Paul Howe examines the relationship between socialization and disengagement in his book, *Citizens Adrift.* Howe points out that, when assessing political habits by age, it's important to distinguish between life-cycle and cohort effects. The theory of life-cycle change assumes that voting preferences will change as people progress through different stages of life with interests reflecting each advancing stage (Howe 9).

The cohort effect focuses on the time period in which citizens were born, rather than on their phase of life. It assumes that a cohort's attitudes are shaped by the political and social climate that they experienced during their childhood and adolescent years. These experiences will shape their perspectives, their values and their level of engagement in politics (Howe 9). Both effects are linked to the concept of a person's perception of their 'stake' in society. Those people who perceive that they have less stake are more likely to be disengaged.

A combination of these effects contributes to a person's likelihood of participating, but an analysis of cohort effects could prove particularly helpful in developing more insightful initiatives to engage young people. For those citizens born after 1990, their social and political climate is marked by the widespread adoption of digital technology. Today, 73% of Canadians spend at least three to four hours online each day (Canadian Internet Factbook) and in the United States, one-fifth of Americans say that they "essentially never stop being online" (Singer and Brooking 24); but as this chapter has established, time spent online is equated with less time spent practicing democratic habits (Applebaum 75), while formal education across North America fails to provide adequate training in digital literacy (Wineburg et al. 3; Hewa). According to Howe's theory of cohort effect, these significant cultural shifts could have long term and lasting consequences on political participation (Howe 9).

Today's young cohort is experiencing a unique combination of factors that is rendering them insufficiently prepared to participate as digital citizens. These factors are compounded by digital threats to democratic values such as the rise in manipulative and propagandistic content, as well as intellectual silos created by algorithmic filtering (Pariser). My creative work responds to these issues and aims to explore how design can be used to highlight them, examining and exposing characteristics of the digital space to enhance knowledge in these areas. This work applies media theories presented by Marshall McLuhan as a means of interpreting our current digital and political environments and their impact on young citizens.

Chapter 2: Theoretical Framework

Revealing and Concealing: Digital Technology and Democracy

Now, my writing has for years been concerned with the effects of things. Not their impact, but their consequences after impact. — *McLuhan, CBC This Hour has Seven Days.*

Marshall McLuhan's theories on media encourage us to look more closely at the implications of our interactions with media, to consider the lasting and long term effects on global culture. As technology becomes more and more intertwined with our democratic processes, education in these areas becomes essential for all citizens. This chapter will present a theoretical framework for interpreting our contemporary experience with digital technology as it relates to democracy; chapter 3 will then expand on these ideas, describing how my design work aims to promote media literacy.

2.1 Intangible Tools with Real Implications

With a focus on the immediate benefits of digital media, including efficiency and access to information, online media users tend to overlook the effects of digital tools and fail to consider the consequences of their patterns of engagement online. A focus on the immediate is what enabled the political consulting firm, Cambridge Analytica, to harvest 5,000 data points on over 220 million Americans in the lead up to the 2016 US election. A large portion of this data was collected through the use of Facebook apps including surveys and a "sex compass". In consenting to use these apps, users unwittingly shared not only their own personal data, but also data belonging to all of their friends (Singer and Brooking 177).

Even in light of these disturbing violations of privacy, we are becoming increasingly more reliant on digital tools, allowing them to infiltrate almost every aspect of our lives. Apps are transformed into invisible structures that support our every need from tracking our steps and sleep, to helping us seamlessly navigate a new city. But the same applications that simplify our lives also render them vastly more complex. Personal information becomes a form of currency that can be used commercially, politically and even as a tool in warfare (Singer and Brooking 4).

One tragic example of this occurred in Ukraine in 2014, when Russian military intelligence used location data on Ukrainian soldiers' phones to track their location, sending them messages including, "they'll find your bodies when the snow melts", just before opening fire on the Ukrainians (Singer and Brooking 59). It was the very ubiquity of the cell phone technology and the soldiers' unconscious use of it that left them vulnerable to attack.

The examples of Cambridge Analytica together with this grim account of the attack on Ukrainian soldiers reveal the dangers of casual digital media use in dramatic fashion. Central to both issues are imperceptible consequences; without an understanding of the functions of technology, online media users leave ourselves susceptible to its impact.

As Harvard professors Steven Levitsky and Daniel Ziblatt explain, democratic erosion is often imperceptible too. They write that one possible fate for failing democracies is a slow slide into authoritarianism, where democracies are dismantled from the inside by their elected officials and through legal means. In these instances, the façade of free and fair elections masks the

dissolution of democratic norms. Levitsky and Ziblatt warn that, "Because there is no single moment – no coup, declaration of martial law, or suspension of the constitution – in which the regime obviously "crosses the line" into dictatorship, nothing may set off society's alarm bells" (Levitsky and Ziblatt 6). This threat is intensified as those who attempt to sound alarm bells are quieted by an online media ecosystem in which the only most sensational narratives go viral and supplant truthful ones (Diamond 232).

Objective journalism is a cornerstone of liberal democracy, and while it is true that there can always be an element of bias at play in the media, until now the news had never been so saturated with propaganda with the explicit intention of subverting the truth for political and commercial gain. Algorithmic echo chambers, coupled with the proliferation of internet trolls, bots, and those who wish to profit from click-bait news stories, are remaking the media landscape (Diamond 235). If we wish to preserve our democratic values, it is our responsibility as citizens to ensure that we know how to navigate the online media ecosystem.

Liberal democracy is founded on the concept of objective reality and concrete truth. These Enlightenment Era theories have for centuries taught us that facts are measurable and singular (Ladd). But today, the internet invites us to see things quite differently. As political activist Eli Pariser outlines in *the Filter Bubble*, algorithmic filtering of information through seemingly neutral search engines moves us into our own separate factual universes. Within these filter bubbles, we see our own version of the world, but democracy requires objectivity and the ability to see one another's perspectives. Without that, we as a society are bound to become

increasingly polarized in our views, leaving us more susceptible to personalized propaganda (Pariser 5).

We are so reliant on digital tools that it is almost impossible to imagine participating in the modern world without them. This thesis does not suggest that we should avoid the digital space, but asks that we consider the ways in which we engage so that we might become better equipped as informed digital citizens with the capacity to safeguard the values of liberal democracy. For any type of propaganda to function effectively, its mechanisms must remain imperceptible to its audience; media literacy is the remedy for this (Diamond 238).

2.2 Media, Education, and Design

My design work presents information around issues of online media education by bringing concealed or complex aspects of the digital space into the material world in the forms of the immersive sculptural work and a series of physical books. McLuhan establishes that we cannot understand our own culture and media from inside a lived experience of it and that we must step outside of our current reality in order to interpret the effects of contemporary forms of media. Additionally, acknowledging that media is an extension of human behavior and desire allows us to consider how that media reflects who we are as individuals and as a society (McLuhan, *This is Marshall McLuhan: The Medium is the Message*).

McLuhan never encountered the internet, but his theory very aptly applies to our current relationship with online technology. In recent years, and particularly after the 2016 US election, the dangers presented by online media became much more widely known. The manipulation of

online technology could now directly influence the outcome of major elections, revealing just how susceptible we are to new forms of intentional and unintentional propaganda (Diamond 13).

2.3 Speed, Volume and Patterns of Recognition in the Digital Space

We are living in an era of epochal change derived from our newfound experience online and, while the outcome of this tremendous shift is still unknown, political scientists agree that the current digital space poses great risks to the stability of liberal democracies (Harari). The way that we think, feel and engage as citizens has changed. We simply cannot process the volume of information generated online each day. As Chris Ladd describes in an article for Forbes magazine, "No human being can even pretend to keep pace with this expansion of data. Information is now generated predominately by machines, for consumption and use by machines. Our ability to derive any value from this information depends on our capacity to interact with those machines" (Ladd).

The task of keeping pace with the swift accumulation of data may be impossible, but the speed and volume of information produced does provide opportunity to study larger emerging trends. McLuhan suggests that in times of rapid change, we may begin to recognize patterns more quickly as well as use this information to better understand our own experience. As an example, he likens rapid change to a film in motion that reveals much more than a still image possibility could. In watching that film, we can see the movement and trajectory of development. When we apply these theories to media literacy and liberal democratic values, the act of pattern recognition may be precisely the tool we need in order to find mechanisms to safeguard our current systems (McLuhan, *This is Marshall McLuhan: The Medium is the Message*).

McLuhan also warns that recognizing these patterns may only occur at the point of their evolution. He writes that, "the sudden visibility of sound just as sound ends is an apt instance of that great pattern of being that reveals new and opposite forms just as the earlier forms reach their peak performance" (McLuhan, *Understanding Media* 27). This indicates that we need to work quickly to identify these patterns, and just as quickly to find solutions to steer ourselves onto a new course before impending and potentially extreme changes can occur.

In fact, recognizing patterns is one of the most important tools used by experts who seek to uncover bad actors online. Pattern recognition can help us identify fake accounts, trolls or bots, by monitoring when and how frequently certain accounts are posting. The Atlantic Councils Digital Forensic Research Lab suggests that we should be suspicious of accounts that post over 50 times a day and those that mainly repost or share stories rather than creating unique content. Fake or bot accounts often have not been active for very long and might use an account name or avatar that is non-specific or that maintains the account user's anonymity in some way (Morden 26).

News and comments published by these fake accounts, trolls and bots appeal to our emotional impulses. The Samara Centre for Democracy refers to this as the "attention economy" that is developed when the limitless flow of information generated online meets the limitations of human attention. Platforms and actors must compete to hold our attention and, in order to do so, they often rely on tactics that manipulate users or that incite strong emotional responses (12). The most sensational stories rise to the top and spread with virality, prioritizing the voices of the

most outspoken individuals. On social media, aggressive or intense political conversation can even have the effect of demobilizing those citizens who do not feel comfortable communicating in this way or on these platforms (6).

My creative work aims to illuminate these power dynamics and the imperceptible patterns of online media, both through the sculptural work and the contents of the illustrated notebooks. In Chapter 3, I will expand on my work and its connection to McLuhan's theories.

Chapter 3: Design Work

Design for Digital Literacy and Political Knowledge

My design work takes two forms; the first is an immersive, hanging sculptural installation made of mirrored laser cut symbols; the second is a series of notebooks containing illustrations and infographics designed to enhance media literacy. I had intended to show the pieces together as part of a gallery exhibit and defense in OCAD University's Graduate Gallery this past summer, but due to restrictions imposed by the Covid-19 pandemic, this plan has been altered to suit a remote, asynchronous defense. The sculptural work will be shown as a mock up and the notebooks will be presented to the committee in hardcopy as well as in PDF format.

3.1 Sculptural Work

3.1.1 A Present of All At Once

Marshall McLuhan describes a new era of "allatonceness" stating that "'Time' has ceased, 'space' has vanished. We now live in a global village...a simultaneous happening" (McLuhan and Fiore 63). The installation work visually exemplifies the concept of 'allatonceness' through an intricate suspended sculpture that represents the volume of content released into the digital space within a single minute. As defense experts P.W. Singer and Emerson T. Brooking point out in their book, *Like War: The Weaponization of Social Media*:

> In a minute, Facebook sees the creation of 500 000 new comments, 293 000 new statuses, and 450 000 new photos; YouTube the uploading of more than 400 hours of video; and Twitter the posting of more than 300 000 tweets. And behind this lies billions more dots of added data and metadata, such as the friend tagging who appeared in that Facebook photo or the system of marking what cellphone tower the message was transmitted through. (Singer and Brooking 58)

Rather than displaying this data in a one-to-one representation with mirrored pieces, the sculpture divides the data in a ten to one ratio. In addition viral news, expressions and events are represented in graphic form, offering the viewer another point of entry to reading the work. For example, graphic icons incapsulate phrases that Donald Trump introduced to the cultural vernacular during the 2016 election, including "grab her by the pussy" and "lock her up"; a flattened globe represents Flat Earth conspiracies, (see fig. 3). Canadian headlines are captured in a mask with Justin Trudeau's phrase "speaking moistly", while the Liberal Party's ethical scandals are represented in graphics depicting the controversy with WE Charity and SNC-Lavalin (see fig. 4).

Fig. 3. Examples of symbols of Trump quotes and online conspiracy theories.

Fig. 4. Icons related to Canadian political news.

These icons are designed to be arresting, evocative, and at times humorous, seizing

attention through an appeal to our emotional impulses in the same manner as viral online media.

McLuhan cites humor as a means of interpreting our environment, writing that it acts as an "anti-

environmental tool." He suggests that it is effective because "it doesn't deal in theory, but in

immediate experience, and is often the best guide to changing perceptions. Today's humor,

[unlike older forms of plot-based narrative], has no story line — no sequence. It is usually a

compressed overlay of stories." (McLuhan and Fiore 92). Arguably, this theory could be applied

to other types of emotional responses that rely on narrative as well. The icons in my work enact

that compression and overlay, translating defining news stories into an overlap of stories in

coded graphic forms (see fig. 5).

The concept of overlay and "allatonceness" are further emphasized by the selection of

news stories that are incorporated as icons in the work. These are stories that span across several

years, but that remain online and reemerge through acts of sharing and retweeting. In this way,

the sculpture captures the multitude of moments that exist within a single moment of sharing or

posting, drawing the audience's attention to the vast, inimitable character of online

communication.

Fig. 5. Photoshop rendering of the sculptural installation.

The suspended sculpture hangs over rows of wooden school desks, that are incorporated

to signal the relationship between the digital space and traditional forms of education. The work

resembles a cloud of content that looms over the classroom. There is a deliberate visual tension

between the materials, as well as the orderly rows of desks and the chaotic, reflective sculpture.

That visual tension is meant to signal the very real tension that exists between learned and lived

experience, as students engage with curriculum that does not adequately prepare them as digital

citizens (Breakstone et al. 3). The chaotic appearance makes the sculptural work difficult to

decipher at a distance, echoing how students are underprepared to decipher the information

that they encounter online. In these ways, this sparkling, digital canopy speaks to the vastness and complexity of the issues surrounding civic engagement, digital technology and media literacy that are ordinarily imperceptible, but that in this case, physically cannot be ignored.

The juxtaposition of physical materials is also designed to establish that visual tension. The contrast of wood and mirror positions the familiar and perhaps nostalgic appearance of the school desks against the bright, contemporary appearance of the mirrored sculpture. The older style of school desks have been used to represent the past while the bright, smooth pieces of mirror represent the conditions of our society's present-day experience online. The relationship between nostalgia and new media is discussed in greater detail in section 3.2.5 of this chapter.

It is assumed that the audience will be familiar with the classroom environment. The familiar nature of the desks and classroom arrangement should encourage the audience to enter the work and to sit at the desks. Some of the desks have the notebooks placed them, inviting the audience to engage with the written and designed materials about media literacy that will contribute to their understanding of the larger body of work. A full description of the notebooks contents is included in section 3.2 of this chapter.

3.1.2 Creative Influences for the Sculpture

The form of the hanging sculptural installation references works by artists Chiharu Shiota, *Counting Memories*, (see fig. 6), Nick Cave, *Until*, (see fig. 7) and Hanna Claus, *Our Minds Are One* (see fig. 8).

Fig. 6. Chiharu Shiota's installation, *Counting Memories*. Muzeum Śląskie w Katowicach, Katowice, Poland, Photo by Sonia Szeląg, Copyright VG Bild-Kunst, Bonn, 2020 and the artist. Staugaitis, Laura. "An Interactive Installation by Chiharu Shiota Celebrates the Universality of Numbers." *Colossal*, 3 Oct. 2019,www.thisiscolossal.com/2019/10/counting-memories-chiharu-shiota/. Accessed 25 November 2020.

Shiota's large scale installation, *Counting Memories,* is comprised of a network of black thread into which numbers are woven and suspended over wooden desks. Shiota's sculptures are described as "creating an existence in the absence", bringing immaterial ideas into the physicalrealm in much the same way as my sculptural work does ("Chiharu Shiota Biography"). In Shiota's work, the viewer is asked to contemplate the universal nature of numbers and their personal associations with them; my own work physically represents the ecosystem of digital communication, asking the viewer to consider their relationship with that space.

I was introduced to Shiota's work by my primary advisor, Professor Annette Blum, as I neared the completion of this thesis. My sculptural work was largely planned and developed at the time when I began researching Shiota's installation; however, seeing this work helped to support some of the material and design choices that I had made. For example, I found it helpful to see how Shiota had incorporated the school desks in the physical space. In *Counting Memories,* the

arrangement of the desks, with large open areas between them, encourages the audience to engage with and move through the space. This prompted me to open up the arrangement of desks to create more spacious rows in my installation.

In Shiota's installation, stacks of paper and pencils are positioned on the desks prompting the audience to respond to questions including, "How many memories do you have?" and "Do numbers tell the truth?" (Staugaitis). In my installation, the school notebooks are placed on the desks, and the audience is encouraged to sit, read, and engage with ideas around media literacy through their reading of those works. As it is does in Shiota's installation, the act of sitting and reading narrows the viewer's focus from the broader experience in the room. The action required by picking up the small books brings the exhibit into a more personal and intimate realm.

The initial designs for the icons and installation were prompted by research into Nick Cave's installation, *Until*. Cave's installation asks the question, "Is there racism in Heaven?" In his work, *The Kinetic Spinner Forest,* Cave hangs 1800 laser cut ornaments from the ceiling. This work can be interpreted on multiple levels and at different vantage points, because the laser cuts appear decorative, moving and catching the light; however, upon closer inspection it becomes clear that the ornaments contain symbols of guns, tears and bullets (Carolan). Similarly, viewers will derive different meaning from my work as they approach and read the individual icons.

Hannah Claus's *Our Minds Are One* is a suspended, domed sculpture made up of a multitude of small disks strung together and printed with images from nature. Woven into Claus's work is a narrative about wildlife, ritual and land that is connected to her heritage as an Kanien'kehÁ:ka/Mohawk and European woman. The piece is ten-feet wide and, like Cave's,

Claus's work is comprised of an arrangement of small objects that require the viewer to simultaneously look at individual pieces as well the whole, as they enter and stand beneath the larger sculpture (The Robert McLaughlin Gallery 22). I initially became interested in Claus's immersive sculptural work because of this form. The dome is appealing as a structural approach because it creates a hollow space into which the viewer can enter and become completely surrounded by the work.

My suspended sculptural work loosely replicates this form, creating a slightly concave shape above each desk; however, because my work is much larger than Claus's and takes up a more significant portion of the room, the effect of these changes in height is very subtle. The scale and amount of space that the work occupies are its most noticeable spatial characteristics.

Fig. 7. An image of Nick Cave's work, *The Kinetic Spinner Forest* from his exhibit *UNTIL*.
Carolan, Nicholas, "Heaven is a Place on Earth", *Grazia*. 2018.
https://graziamagazine.com/articles/nick-cave-until-carriageworks/.
Accessed 23 April 2020.

Fig. 8. Hannah Claus, *Our Minds Are One;* The Robert McLaughlin Gallery. *Reading the Talk.* Oshawa, July 2016. https://issuu.com/thermg/docs/rtt_final_nov29sm_updated. Accessed 17 April 2020.

When the viewer enters my sculptural piece, they walk between the rows of desks, becoming completely immersed in the larger work. From this vantage point inside the work, the viewer is close enough to the icons to be able to read the content of the symbols on the laser cuts. This interaction imitates the online experience, where our attention is directed to what is immediate and in front of us, thus distorting our perception of time and the network as a whole (Singer and Brooking 66).

This again references McLuhan's theory of "allatonceness". In philosophy, this experience with time is referred to as "presentism". When we experience presentism, we lose our grasp on the significance of the past or future, focusing instead on an all-encompassing sense of now. Singer and Brooking write that:

…if you've ever found yourself paralyzed as you gaze at a continually updating Twitter feed or Facebook timeline, you know exactly what presentism feels like. Serious reflection on the past is hijacked by the urgency of the current moment; serious planning for the future is derailed by never-ending distraction. (Singer and Brooking 66)

The sculpture, in its representation of a single minute of social media uploads, visualizes presentism. The icons depict headlines from various time periods and news cycles, representing the dissolution of time in the context of online media use. Digital content is ever-present and may reemerge at any point, disseminated not just through established media channels, but also by social media users (Singer and Brooking 67).

While that wider range of views might appear to present more ideas and opinions, the volume of content produced has driven the development of algorithms that narrow our exposure to different perspectives. When we are online, our attention is siloed by algorithmic filtering or *filter bubbles* that force us to see an increasingly narrow and isolated perspective. Filter bubbles are particularly dangerous because they enforce our personal biases or "preferences" through mechanisms that are both unseen and passive, rendering them particularly difficult to escape. Exposure to these algorithms is practically unavoidable, leaving users highly susceptible to   forms of manipulation and propaganda (Pariser).

3.1.3 Reflections and Our Personalized Online Sphere

The mirror is used to reference the filter bubble reflecting an internet user's own biases back at them, just as the reflective surface of the laser cut pieces renders it impossible for the viewer to look at the icons without seeing their own image gazing back at them. The viewer must

look past their image to read each of the icons, an action that symbolizes just how difficult it is to see past their individual sphere online (see fig. 9).

The mirror also references the eye-catching nature of viral and propagandistic content, signifying a need to reflect on our own behavior as digital citizens. As internet users engage with or share stories that align with their personal biases, they become complicit in compounding the negative effects of propaganda. Worryingly, this is not uncommon. In fact, a Brookings Institute Report found that during the 2016 US election, the top twenty fake news stories generated far more shares, comments and reactions than the top twenty stories reported by major news organizations. Facebook estimates that Russian-generated content was seen by 126 million of its users during that same election cycle (West). As we engage with this type of content, we increase its virality and actively drive its dissemination. This again establishes the importance of educating citizens to be more discerning about the content that they share online.

These issues apply not just to sharing information and news stories online, but also to the way that we comment on and discuss politics. A study by the Samara Centre for Democracy found that while 47% of Canadians believe that online conversations about politics are angrier and less civil than offline conversations, only 7% were willing to suggest that they might be contributing to the negative online dialogue. This disparity in opinion suggests a lack of self-awareness regarding the negative impacts of online media use (Morden 14). The mirrored elements of the sculpture signify a need to reflect on these actions and assumptions.

Fig. 9. Samples of some of the mirrored, laser cut pieces to
be included in the larger sculptural work.

I considered other materials for the icon designs, including a reflective velum, but chose

mirror because of its weight and its highly reflective surface. The design of the icons could easily

be laser cut into the acrylic mirror and they maintained their shape once suspended. I was

concerned that the velum would not hold its form and that it would not have the reflective quality

that the project demanded.

Once strung together in the larger structure, the mirrored icons represent the online

ecosystem is what McLuhan refers to as an environment, when he writes that:

> All media work us over completely. They are so pervasive in their personal, political,
>
> economic, aesthetic, psychological, moral, ethical, and social consequences that they
>
> leave no part of us untouched, unaffected, unaltered. The medium is the massage. Any
>
> understanding of social and cultural change is impossible without a knowledge of the way
>
> media work as environments. All media are extensions of some human faculty - psychic
>
> or physical. (McLuhan and Fiore 26)

The sculpture endeavours to reveal the psychic through physical representation and, in doing so, offers a means of better understanding our relationship to our contemporary and digital environment.

3.2 School Notebooks

The notebooks serve a different purpose: instead of concealing and gradually revealing information, they are designed to deliver direct, concise information through a series of illustrations and infographics (see fig. 10).

Fig. 10. Photograph of the three notebooks and covers that were designed in different colours to correspond with different subject matter. The design of the book references the type of exercise book used in many Canadian elementary and secondary schools.

3.2.1 Graphic Text and Book Design

The design of the books establishes another connection to McLuhan because it has similarities to the text that he created with Quentin Fiore, *The Medium is the Massage: An Inventory of Effects* (see fig. 11). Fiore, an author and graphic designer, visualized central concepts from McLuhan's previous works in this publication with text and imagery. As Scott Boms, design lead and studio manager of the Analog Research Lab at Facebook explains, Fiore's book distills McLuhan's concepts in a more approachable form (Heller).

In a similar manner, my work aims to express ideas around digital media in an accessible way. My designs apply the visual language of contemporary online media to printed books in much the same way that McLuhan and Fiore's 1967 text deciphers McLuhan's ideas using the visual language of the age of television. With my design work, this is represented through familiar digital communication devices like shortened content length, visual representations of information, as well as an effort to layer in humor and other sensations that have been shown to increase the appeal and virality of digital content; in McLuhan and Fiore's book, the size and placement of text and images on page are unconventional and provide a sense of movement that mimics the experience of watching television.

Fig. 11. Examples of a page layouts from *The Medium is the Massage: An Inventory of Effects* by Marshall McLuhan, Quentin Fiore. The work relies on a variety of techniques to illustrate the concepts from McLuhan's text, including the use of culturally familiar imagery in the form of Grant Wood's *American Gothic,* dynamic typography to create emphasis and photography. Heller, Steven. Interview with Scott Boms. "Quentin Fiore (1920-2019) Dies". *PrintMag,* 26 Apr. 2019, https://www.printmag.com/post/dummying-medium-massage-marshall-mcluhan. Accessed 24 November, 2020.

Bom has a unique relationship with McLuhan's work because he is married to McLuhan's granddaughter and owns the original dummy of McLuhan and Fiore's book. In an interview with Steven Heller for Print Magazine, Bom describes the influence of McLuhan's theories on his work at Facebook, saying that they have helped him look more critically at intentional and unintentional forms of media that the company creates. Bom states that Facebook could be considered, "the ultimate manifestation of McLuhan's ideas," citing their newsfeed as an example of a new medium usurping the old, while simultaneously renewing interest in the old by redefining its purpose. He refers to board games, vinyl records and books as examples of this (Heller).

In much the same way, the traditional school exercise notebook takes on a renewed purpose in this project because of the nature of digital technology and education today. As students become more reliant on digital tools for search, reading and note-taking, the position of the traditional notebook is usurped. But from its seeming obsolescence comes a new form of novelty: the notebook takes on the ability to communicate in a way that is distinct from today's digital tools.

Bom's interview is also relevant to this work because he, too, connects McLuhan's theories to a need for increased education in digital citizenship. Bom says that:
…people need to learn to be better digital citizens. Marshall's work lays out some of the signposts, identifies some of those patterns. We're at a point now where media studies are as critical a part of education as social studies. Perhaps even the same. It's not something I've seen taken seriously, and without getting too on-the-nose, I think you can see where that's got us all today…" (Heller)

Bom points to teaching McLuhan's theories in high school curriculum as a means of increasing education in digital citizenship. His line of reasoning, combined with his analysis of the success of Fiore's visualization of McLuhan's concepts, suggests the merits of this thesis work as a means of promoting awareness in media literacy.

3.2.2 Infographics and Illustrated Explainers

My texts rely on infographics which are a form of information visualization that combine imagery, graphics and text to present data or information in such a way that it is clear and easy to absorb (Lonsdale et al. 41) (see fig. 12). There has been a great deal of research demonstrating the efficacy of infographics as a tool for teaching and retention. A 2016 study of 140 University students found that the infographics enriched their learning experience, rendering content more memorable and understandable. While many of the students surveyed indicated that they were not familiar with infographics as a visual tool, 86.4% reported that infographics helped them better understand the issues that they were studying (Ozdamli et al. 376). In fact, an important aspect of infographics is that they are easily understood by people of different ages and with varying degrees of literacy. As a result, infographics can clarify information in an engaging way, through a unique form of visual narrative (Matrix and Hodson 17).
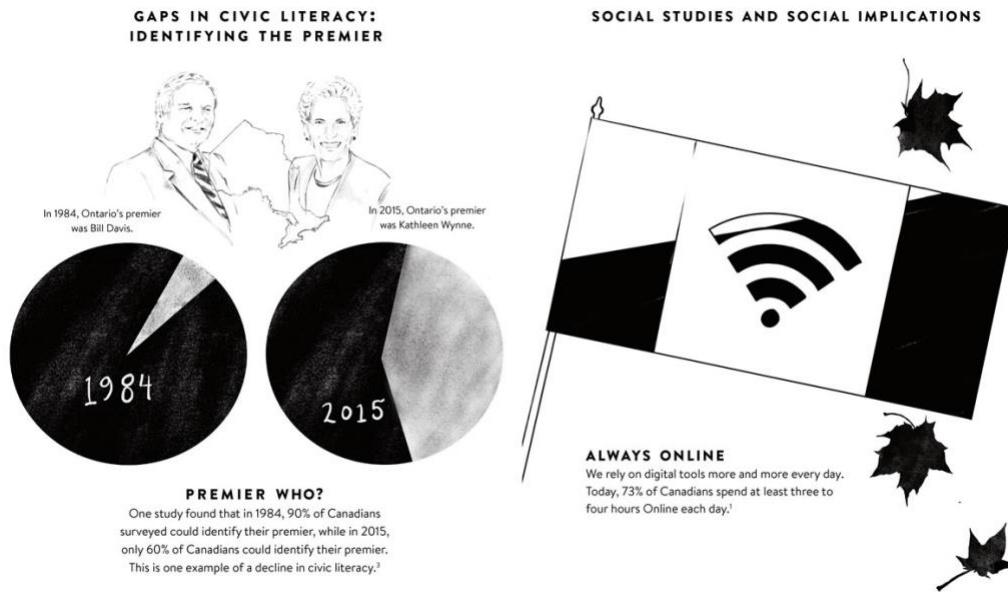
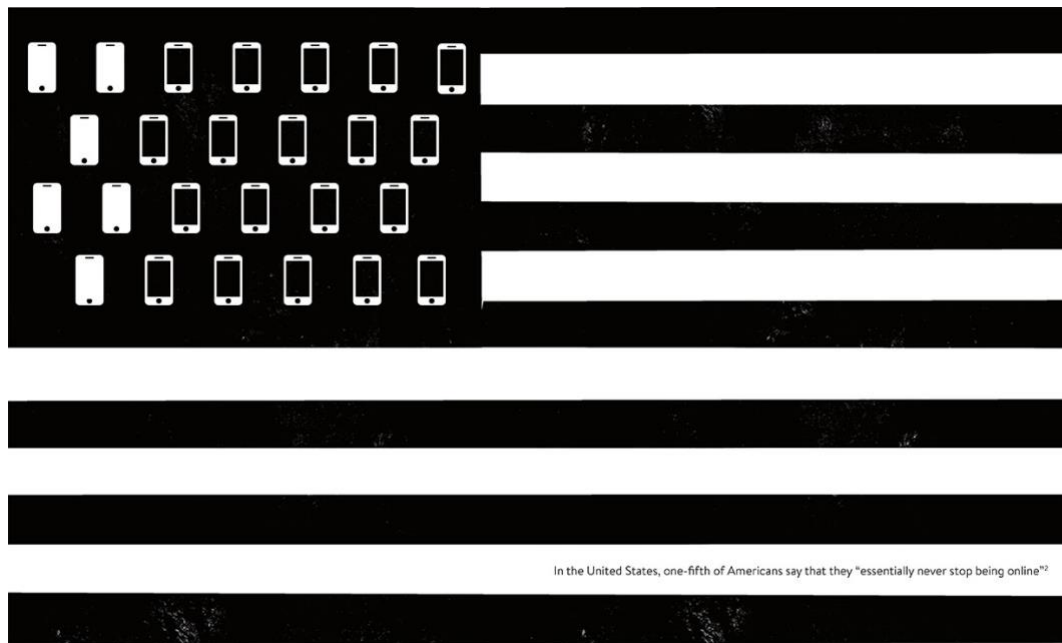Fig. 12. Two examples of infographics in the notebooks.

Fig. 13. Example of infographics in the notebooks.
Each example combines illustration, text and data visualizations.

In their paper, "Digital Literacy: A Demand for Nonlinear Thinking Styles", Osterman,

Reio and Thirunarayanan advocate increased training in visual literacy, writing that, "the Internet

demands users to be visually literate to advance critical thinking, decision-making, communication, creativity, and learning on the web. With much of today's media delivered in visual form, students need visual literacy and artistic skills to understand, interpret, and create information" (Osterman et al. 151). These insights suggest that design is an essential aspect of digital literacy. Rather than focusing solely on a checklist approach to discerning the reliability of online information, as curriculum frequently does, (Breakstone et al. 27) educators who focus on communication through design offer their students opportunities to simultaneously expand both their visual and digital media literacy (Osterman et al. 152).

According to Osterman, Reio and Thirunarayanan, linear thinking is logical and analytical, focusing on external data and rational analysis, while nonlinear thinking relies on emotion, intuition, insight, and creativity (Osterman et al. 149). They argue that navigating between pages online requires a type of interaction and comprehension that is nonlinear and associative; this experience is replicated through the process of reading infographics (149).

Nonlinear and associative ways of thinking are also important to consider in relation to McLuhan's theories. McLuhan writes that the content of one form of media is always another form of media. In this way, media is always associative and referential. He says that, "the effect of the medium is made strong and intense just because it is given another medium as 'content.'" (McLuhan, *Understanding Media* 23).

My design work is also referential, using the classroom environment to reveal the vast ecosystem of online content and exposing some of the pertinent issues around media and politics through the notebooks. The desks and notebooks act as visual cues signalling a familiar educational

experience, grounding the viewer while enabling them to engage with new ideas presented through the sculpture and notebooks. The sculpture's icons themselves are also associative, referencing the viewer's online experience through familiar expressions, news events and viral content that has been widely shared over the past few years. In this way, all of these designed components encourage a nonlinear approach to reading that layers meaning which, like the exhibit itself, is designed to express the viewer's online experience on multiple levels.

3.2.3 School Subjects and Categories

In an effort to bring clarity to issues that span across so many disciplines and influence our lives in so many ways, the books categorize information by subject. These categories also serve as references to a school experience. For example, the Science notebook breaks down the anatomy and subspecies of trolls, bots and malicious actors (see fig. 13). That text offers a set of "formulas" that can be used to identify bots and fake accounts. The Health and Wellness notebook presents information on the health and stability of democracies, likening a balanced diet to democratic balance and physical activity to active citizenship (see fig. 14); A Social Studies text speaks to the impacts of digital media on our decision making abilities and mental health (see fig. 15).

Each book describes and summarizes digital media issues and presents practical solutions for improving our online media interactions. The information presented in the books provides a broad overview of each of these topics, offering the reader an explanation of a variety of subjects that will contribute to their media literacy and a greater understanding of the larger issues. All of the written content in the infographics and illustrations is presented in short paragraphs and small information bites, reflecting the nature of communication online.

SCIENTIFIC TRUTH AND DEMOCRACY

OBJECTIVE AND MEASURABLE

Like science, democracies are founded on the assumption that reality is objective, singular and measurable. Citizens need access to information about that reality in order to effectively participate in the democratic process. The media is largely responsible for sharing that information.[1]

DEMOCRACY SCIENTIFIC TRUTH
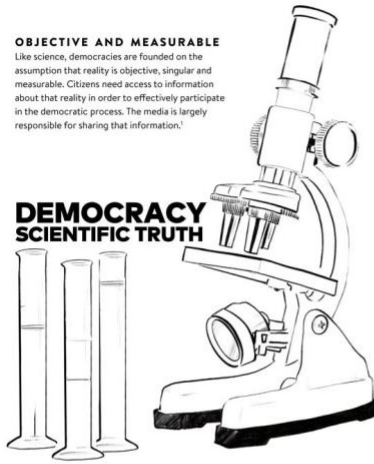
PRIMARY SPREADERS OF DISINFORMATION

SPREADER SPECIES

There are several species of creatures that spread disinformation Online. The following section outlines the anatomy of these creatures and how you might avoid or combat them, when required.

IF YOU ENCOUNTER AN INTERNET TROLL

DO NOT FEED THE TROLLS

If you encounter an Internet troll, do not engage. Engaging with trolls can encourage and intensify their bad behaviour.[4]

AVOID BECOMING A TROLL

Studies show that we are less civil on mobile devices, due to the nature and brevity of mobile messaging. We can avoid conflict by practicing 'slow politics' and by not engaging in reactionary political conversations on our phones.[6]

ANATOMY OF A COMMON DIGITAL BOT

WHAT IS IT

Web robots or bots are software applications that automate or run structurally repetitive tasks Online.[4]
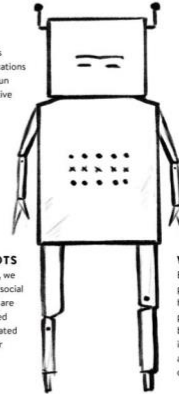
POLITICAL BOTS

In a political context, we think of bots as fake social media accounts that are sometimes automated and sometimes operated in part by a person or organization.[4]

WHAT THEY DO

Bots serve several purposes. They can be helpful in automating processes or they can be harmful in posting inflammatory messages acting to suppress certain voices.[4]

FIVE BOT SPOTTING FORMULAS

There are many types of bots, but here are some tips on how to identify the type of bots that pose as human actors and that amplify political messaging.[8]

ONE: SUSPECT POSTS

Oxford Internet Institutes Computational Propaganda team concludes that if the account has over 50 posts a day, it should be considered suspicious.

The Atlantic Digital Forensics Research Lab suggests that 72 is the number of posts associated with suspicious accounts, while 144 daily posts is considered highly suspicious.[9]

WATCH ACTIVITY

Bots are often recognizable because they post more frequently than real users do. To examine the activity data, simply divide the number of posts by the number of days an account has been active for.[8]

FIVE BOT SPOTTING FORMULAS

TWO: ACCOUNT ANONYMITY

Very little personal information or generic avatar images on an account may indicate that it belongs to a bot.[8]

THREE: ACCOUNT AMPLIFICATION

Another sign of a bot account is when the account shares mainly quotes or retweets. In other words, it has very little original content.

Professional tools known as machine scans can be used to analyze the content of a user's tweets, but you can also review an account's "tweets and replies" tab take a look at the content of a user's recent posts. Experts suggest looking at trends across an account's last 200 posts to determine how often the account shares original content.[8]

Fig. 14. Six pages from the Science Notebook.

PSYCHOLOGY: YOU ARE WHAT YOU LIKE

PSYCHOMETRICS

During the 2016 US election, the political consulting firm Cambridge Analytica used psychometric analysis to look at data collected from 220 million American's Facebook accounts.

By analyzing just 10 Facebook "likes" they could know more about a person than their work colleagues knew.

By analyzing 70 "likes" they could know more about a person than their real life friends knew.[2]

THE POSITIVE VS NEGATIVE NEWS FEED EFFECT
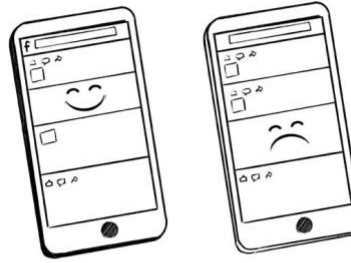
EMOTIONAL CONTAGION

Facebook conducted a controversial study on 689 000 user's news feeds to determine whether they could influence users' moods. By filtering news feed to show either positive or negative content, Facebook determined that emotions are contagious. Users with the positive news feed reacted by posting more positive news of their own, while users with negative emotional content in their feeds responded with negative content.[3]

TIME SLIPS AWAY: THE VAST NOW

PRESENTISM

Presentism takes place when we find ourselves caught in an endless scroll or constantly refreshing our Instagram feeds or Facebook timelines. When we experience presentism, we lose our grasp on the significance of the past or future, focusing instead on an all-encompassing sense of now. Singer and Brooking write that, "Serious reflection on the past is hijacked by the urgency of the current moment; serious planning for the future is derailed by never-ending distraction."[2]

SHAPED BY OUR TOOLS
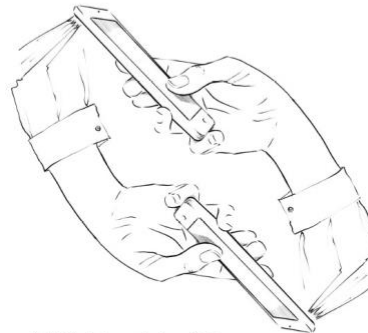
As digital tools change, so too do we. Digital technology has changed the way we learn, play, communicate, and navigate the world around us. It's important to recognize some of the risks associated with using digital technology, so that we can begin to seek out ways to protect ourselves from some of its more harmful elements.

MEDIA CONSUMPTION: ADDITIONAL CHALLENGES

NEWSPAPERS IN DECLINE

Newspapers and traditional news outlets have acted as gatekeepers to quality information, but readership is in decline. Meanwhile, more and more people are getting information from less credible, online news sources.[5]

MEDIA CONSUMPTION: ADDITIONAL CHALLENGES

SOCIAL DISTORTION

Social media can create distortions in our understanding of issues and political events, by presenting users with inaccurate or incomplete information.[5]

Fig. 15. Six pages from the Social Studies Notebook.

ACTIVE
PARTICIPATION
FROM ITS CITIZENS

FREE +FAIR ELECTIONS **PROTECTION OF HUMAN RIGHTS**

A RULE OF LAW
APPLIED EQUALLY FOR
ALL CITIZENS

Healthy democracies rely on these four elements, according to Larry Diamond, an American political scientist. This book will focus on the role of active and engaged citizens.[1]

INSTITUTIONAL KNOWLEDGE • TOPICAL KNOWLEDGE • POLITICAL ABILITY • MEDIA LITERACY

FOUR TYPES OF CIVIC LITERACY
Just as a balanced diet is made up of four food groups, there are four areas of civic literacy that make up a balanced understanding of citizenship. The Samara Centre for Democracy has identified them as Institutional Knowledge, Topical Knowledge, Political Ability, and Media Literacy.[2]

CULTURAL REORIENTATION **STRESSING SKEPTICISM**

EMBRACE
OF THE **CRITICAL METHOD**

ACTIVE
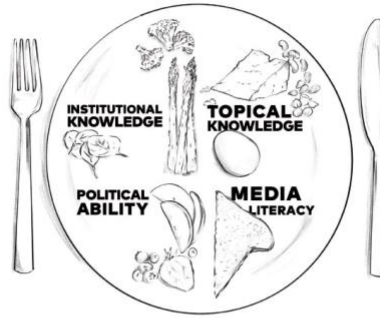## CONSUMPTION OF THE INTERNET

KEY INGREDIENTS
We are only just learning what it means to be a good digital citizen, but experts agree that we need media training for young people and adults alike. Political scientist, Larry Diamond identifies three key ingredients to improving our media literacy: cultural reorientation stressing skepticism, embrace of the critical method and active consumption of the Internet.[1]

Media Facts

Serving size	50g	
Amount per serving		
Calories	**1000**	
		% Daily Value
FAKE NEWS 100g		700%
MISINFORMATION 700g		900%
NUTRITIOUS INFORMATION 20g		20%

*The % of Daily Value (DV) tells you how much a nutrient in a serving of media contributes to a daily diet. Truth and objectivity are recommended for general nutritional advice.

POTATO CHIPS

SCARY! GROSS! VIOLENT!

SALT

Sugar

CHIPS

GOSSIP!!!

Political Activist Eli Pariser explains:
"Our bodies are programmed to consume fat and sugars because they're rare in nature. Thus, when they come around, we should grab them. In the same way, we're biologically programmed to be attentive to things that stimulate: content that is gross, violent, or sexual and that gossip which is humiliating, embarrassing, or offensive...."[4]

GOSSIP!!!

VIOLENT! GROSS!

SCARY!! SENSATIONAL!

He goes on to say that, "...If we're not careful, we're going to develop the psychological equivalent of obesity. We'll find ourselves consuming content that is least beneficial for ourselves or society as a whole."[4]

Fig. 16. Six pages from the Health Notebook.

3.2.4 Creative Influences for the Books

When I started developing the content for the infographics, I became interested in work by designer and data analyst, Jessica Bellamy. I had the opportunity to see her speak and to participate in one of her workshops at the RGD Design Thinkers Conference in November, 2018 and I attended another of Bellamy's lectures online this spring through the Department of Art, History and Design at Michigan State University.

Bellamy describes her work as "data storytelling". She started her career by creating and distributing infographic explainer documents to breakdown complex policy issues affecting local communities ("Bellamy Infographics About"). She later founded a design agency called Grassroots Information Design Studio or GRIDS that works exclusively with non-profit and community groups with the aim of increasing access to information and presenting data to the communities affected by it (The Grassroots Information Design Studio).

Bellamy frequently refers to the information that she provides as a type of weapon that equips marginalized groups to fight back against the policies that seek to oppress them. She writes that the data she presents can be used to "refute problematic ideology, support community voices, demonstrate root causes, and hold authority figures accountable" (Bellamy).

Bellamy is acutely aware of the political context of the imagery that she produces and data that she represents. She argues that aesthetic concerns should never diminish or detract from the function of the infographic. She strives to present information in an equitable format that dismantles harmful stereotypes and biases, writing that:

We, as designers, are culpable in the state of our country. It is not enough to be user-centered or human-centered in our work. We need to work with both the micro-context and macro-context in mind. We all need to take responsibility for what we create and put into the public sphere. Everything we make is either complicit or in opposition to accepted stereotypes, de-humanizing stigmas, institutional racism, and so many other colonialist genres of oppression. We have so much power as designers, which is why our aspirations for our work must be braver. (Bellamy)

Through my design work, I also strive to ensure that my infographics and illustrations do not perpetuate stereotypes. I aim to approach representation with sensitivity and thoughtful consideration. One of the first projects that I completed at OCAD University was a *Canadian Voting Timeline*. The piece was an interactive augmented reality project that marked the dates when different minority groups were granted voting rights in Canada. It was imagined as a piece that would be displayed in an elementary school classroom and that would allow students to interact and learn more about the experience of each group through captions, video and animations that were triggered through an augmented reality application on their device.

The timeline represented each minority group with a single figure. Soon after beginning the project, I became aware of how problematic that type of representation could be; because of the format and detail in my illustrative style, it was difficult to adequately represent the diversity of each group and to avoid perpetuating stereotypes. My illustrative work since then has become less specific and representations of figures are more symbolic.

Aesthetically, Bellamy's design work is quite different from my own. Her graphics and explainers are often filled with colourful and dynamic content that relies on active compositions and spatial hierarchy to emphasize certain aspects of the data (see fig. 16). My design work differs in approach, with graphics of relatively uniform size laid out on individual pages. My designs are primarily illustration-based, while Bellamy's incorporate flat graphics and photography. Despite these distinctions, our infographics share a common intent – to disseminate information for the purpose of educating and empowering citizens to become more aware and actively engaged (Bellamy).

Fig. 17. A still from a motion infographic created by data storyteller, Jessica Bellamy. "Bellamy Infographics Portfolio." *Bellamyinfographics*, https://www.jessicabellamy.design/portfolio. Accessed 23 July 2020.

Bellamy's graphics resonate with the population impacted by the data because, in many cases, she works directly with these communities. For example, when her family's Louisville neighbourhood, Smoketown, (the oldest historically black community in Kentucky) faced

gentrification, she worked within the community to create explainer documents to express the population's data stories. Because of their proximity to the issue, Bellamy's work provoked many people to become civically engaged. The need for immediate action was made visible through the graphics that appealed on a personal emotional level, as citizens faced the immediate risks of losing amenities and the character of their neighbourhood (Bellamy, *Pecha Kucha Night Louisville*).

Our emotions can play an important role in the appeal and spread of political information (Morden et al.). My work also aims to communicate with impacted groups, but because issues of education in digital citizenship and media literacy affect the population much more broadly, the approach to eliciting an emotional response must be equally broad in its appeal.

3.2.5 Nostalgia and New Media

In an effort to draw the viewer in on a more personal level, the work is designed to evoke the feeling of nostalgia. Both the antique school desks and design of the exercise books are visual references to education in a traditional, institutional setting. Beyond the design of the covers, the exercise books use traditional, and thus familiar institutional conventions to organize information about media literacy, civic engagement and democracy. For example, the books are organized by colour and subject, just as courses would be in an elementary or secondary school setting in Canada (see fig. 10). These highly recognizable elements were designed to create a nostalgic appeal, while playfully engaging the audience's curiosity.

Nostalgia privileges the past and is a particularly useful device for establishing this project's theoretical framing. McLuhan argues we interpret our contemporary experience through

"a rear-view mirror." He writes that, "when faced with a totally new situation, we tend to attach ourselves to the objects, to the flavour of the most recent past…We march backwards into the future" (McLuhan and Fiore 74). With my work, the reference to the past is used as a mechanism for emotionally transporting the audience to another time.

In his paper about nostalgia, technology and consumer identity, Mark Ruppel writes that, "regardless of the orientation of nostalgia, it is clear that in the act of nostalgic remembering, there is a projection that takes place which involves not only the present-day self, but also a past self who is constructed in either accord of or deference to the present" (Ruppel 544). In this way, nostalgic remembering provides a vantage point through which audiences can begin to examine their contemporary media environment. Like McLuhan's description of the moment in which sound becomes visible, it is at this tenuous point of intersection between old and new that we can quickly glimpse our current experience (McLuhan, *Understanding Media* 27).

The seemingly paradoxical relationship between nostalgia and technology is frequently used as a design and marketing tactic in the technology industry. As Ruppel explains, nostalgia is included in these campaigns to remind us of the human aspects of the digital experience and to express the necessity of our role as human users. This becomes particularly important when marketing new technology, because of the rapidity of technological change. Ruppel writes that, "the eventual streamlining of all digital artifacts, and by extension all technology, prevents us from appreciating what they are presently. Scarcely do we have the time to schematize a technology before it changes, updates, mutates from incarnation to incarnation" (Ruppel 552).

Nostalgia counteracts these changes in the consumer's mind, enabling them to focus on the more

constant element of their personal human connection to technology (552). I have applied it as a

device in my work to achieve the same ends.

However, as McLuhan outlines, the interconnection between technological tools and human

beings is inseparable and symbiotic. In a quote that is often attributed to McLuhan, his

contemporary John Culkin writes, "we shape our tools and thereafter they shape us" (Hurme and

Jouhki 145). The application of nostalgic elements in my design work aims to express that

interaction, allowing the audience to examine the ways in which these tools are shaping us as

digital citizens.

3.2.6 The Significance of a Printed Physical Format

Having my work live in a physical space allows the viewer to look past the apparatus or

functional aspects of digital technology, such as the screen, light source, or animations, to better

understand the underlying nature of online media. Stripping away the digital façade allows us to

look more closely at the intrinsic characteristics of digital technologies as a communication

medium, and the tangible, physical forms of my work paradoxically reveal the concealed aspects

of our digital experience.

As a whole, this design work invites the audience to consider how these factors have

changed us, our culture and democracy. The aim of this approach is to break down the major

issues that threaten democratic values and digital citizenship so that we might begin to see them

as being more manageable issues that we can affect and change. The work explores how we can

achieve these ends through design for media literacy and increased political knowledge.

Chapter 4:

Research Methods and Other Creative Projects

The research methodology for this thesis was primarily grounded in practice-led research, semiotics and critical discourse analysis (Sullivan; Fairclough). As a component of the practice-led research, I have created a series of design projects that explore themes related to civic and media literacy. Each design project is distinct, with its own set of methods and goals that connect to the broader objectives of my thesis work. In the following section, I will outline some of those research methods as I discuss these projects.

Art theorist Graeme Sullivan says one of the advantages of undertaking practice-led research writing is that "coming to understand the interconnections among visual forms, patterns of inquiry and different perspectives offers the possibility of making intuitive and intellectual leaps towards the creation of new knowledge" (Sullivan 43). Research through practice has provided the opportunity to iterate concepts for this thesis work in order to arrive at the final projects.

In order to determine the content for the work, I relied on critical discourse analysis or CDA as an approach to research. Norman Fairclough describes CDA as a "systematic transdisciplinary analysis of relations between discourse and other elements of the social process" (Fairclough 10). This methodology goes beyond commenting and describing discourse or texts and uses normative standards to purpose solutions for rectifying social issues (10). My research has analysed discourse in media theory, political science, technology, education, and design as a means of identifying the underlying social problems related to democratic

engagement. This knowledge has been used to explore ways of addressing those problems through design.

Fairclough also writes that "critical analysis aims to produce interpretations and explanations of areas of social life which both identify the cause of social wrongs and produce knowledge that could (in the right conditions) contribute to righting or mitigating them" (8). In addition, the critique aspect of critical discourse theory relies on the notion of the existence of a good society and it is to this ideal that the existing society is compared (7). In the context of this work, 'good society' is a healthy democracy with well-informed, actively engaged citizens and the existing society is one that is suffering from the negative impacts of civic illiteracy and an increased reliance on digital technology. My work proposes designs as components of what should be a much more extensive and wide-spread educational process of restoring democratic stability.

Semiotic theory is also significant to this work, since both the sculptural work and written books required consideration and interpretation of culturally recognizable signs and symbols. As a practice, I engaged in a process of analyzing data and news headlines, which were then translated into visual forms. These forms were represented in the laser cut symbols in the sculptural work as well as in the illustrations and infographic content in the notebooks. My work engaged with a what Umberto Eco refers to as a semiotics of communication that applied a theory of sign production (Eco 4).

The restrictions imposed by the global pandemic prevented the exhibition from taking place; however, had I been able to display the work, I would have gauged the success of the sign

production in relation to the audience's response to the work. If I pursue these projects further and have the opportunity to showcase the installation, I will conduct interviews to document audience reactions and interpretations of the different components of the work.

4.1 Augmented Reality Canadian Voting Timeline

The first project that I created as OCAD U was an Augmented Reality Canadian Voting Timeline. The piece was designed to be an educational tool that would be installed and used in elementary school classrooms. The timeline layers traditional learning methods with principles of interactivity. This large wall installation outlines the dates when different minority groups were granted voting rights in Canada, representing each group with a single figure (see fig.18.)

Fig. 18. Augmented Reality Canadian Voting Timeline.

Integrated throughout the installation were augmented reality or AR codes that trigger an interactive educational experience for the user. Unlike the complete immersion of virtual reality,

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augmented reality allows the viewer to see computer-generated elements layered onto a view of their current environment through a device such as a phone or tablet. In this case, when the user held their device up to the AR code on the illustration, they saw additional information layered over top of the illustration, in the form of captions, videos and animations. That supplementary content shared information on the ways in which minority groups have been treated throughout Canadian history. It was intentionally thought-provoking, encouraging the viewer to question assumptions about Canadian values in relation to a timeline that revealed the deep inequities faced by different members of the population.

The piece was shown in the Graduate Gallery as part of a group exhibition with the first year IAMD cohort in 2018. During the exhibition, I experienced several technical challenges in supporting the AR. Visitors were required to download an app to view the work, but the technology and interface did not have the stability or consistency to ensure a seamless user experience. I brought in an iPad to alleviate some of these issues, but because AR is triggered by the device hovering over the code, placement must be very precise; therefore the iPad, in its static position on a stand, could only capture one central code. While the AR component was interesting, I became concerned that these challenges might hinder a learning experience.

In reflecting on the work, I concluded that it also focused too heavily on voting as the central element of citizenship and did not convey the importance of other aspects of democracy. In addition, for the piece to be truly successful, it would require much more extensive historical

research and perhaps interviews to ensure that the work could accurately capture the diverse perspectives that it sought to expose.

4.2 Political Distraction Mobile:

With my next project, I endeavoured to consider the issue of civic engagement from a young person's perspective. I was interested in how we begin to understand a political system from within a lived experience of it. This prompted the question of how growing up in a particular political environment shapes our impression of our role in society and government.

This question led me to consider the significance of symbolism in early learning. I looked to semiotic theory as a method for examining shapes and symbols that might affect a young person's perspective. To explore this concept, I created a child's mobile, a device that is often used to introduce babies to shape and colour; but instead of the familiar trappings of a childhood mobile, this piece featured fractured elements of politically significant shapes and symbols. The initial prototype included fragments of different nation's flags laser cut out of mirrored acrylic.

The plan for this project shifted when, in the spring of 2018, the Trump administration enacted a highly controversial immigration policy. The policy dictated that when the families were found to be illegally crossing into the United States, parents and children were to be apprehended and separated at the border. This 'zero tolerance' policy that was considered too "inhumane" by previous administrations saw thousands of children detained in makeshift shelters. Even some of Trump's most ardent supporters cited the cruelty of the policy, drawing comparisons to Nazi Germany (Davis and Shear).

To make matters worse, due to inadequate tracking systems, many of the children could not be reunited with their parents. This left volunteers with The American Civil Liberties Union or ACLU travelling door-to-door in Honduras and Guatemala in an effort to track down children's families. The ACLU later reported that, as of October, 2019, at least 5400 children have been separated from their parents when entering at the Mexican border (The Associated Press).

Additionally, while children and families suffered the very real consequences of this policy, Trump's administration seemed to beckon the world to look away, offering a series of distracting narratives that drove the news cycle. For example, when Melania Trump visited children detained in shelters in Texas, she wore a jacket with the words, "I really don't care, do u?" written on the back. A tweet from Trump indicated that this spelled out their contempt for the "fake news" media (Rogers). Like a theatrical magician misdirecting an audience to accomplish his trick, Trump distracted the public with sensational tweets and stunts while real people suffered from his political actions. This became the subject of the mobile.

I began developing graphic shapes for the mobile that represented some of the sensational tweets and phrases that had been driving the news cycle. By applying a semiotic approach, the icons layered symbolic meaning, creating new graphics that could be read and understood by anyone who followed US media at the time. Symbols included Melania's jacket; a globe with land masses representing Trump's phrase "shithole countries"; and a paper roll adorned with the

Puerto Rican flag (see fig. 19). These were then cut out of mirrored and black acrylic and were assembled as the content of the mobile.

Fig. 19. Mobile displaying laser cut graphics.

The mobile was designed to be suspended over a crib filled with paper replicas of bills and torn up agreements. This was meant to signal the issue of family separation and political action that transpires while we focus on the sensational and symbolic – in this case, the elements contained in the mobile. The spatial divide between the papers and the mobile physically represents the political tactics that divide our attention.

The mobile has direct links to my final sculptural work, but also prompted my thinking about digital citizenship and the spread of information online. While this piece had a focus on American politics, it was important that my work expand to address more holistic issues of democratic and digital citizenship.

4.3 Propaganda in Filter Bubbles and Renaissance Frescoes:

As an independent study in Florence, I undertook to learn more about the propagandistic function of algorithmic filtering through a comparison of Google search to Renaissance forms of propaganda in artwork. The comparison focused specifically on the Medici family in Florence, which held vast political reach and artistic influence during the Renaissance period (Strathern). In addition to the textual analysis and research conducted in and around Florence, I also undertook a practice-led project. Through that project, I examined my own Google search results around a current and politically charged issue—changes to abortion rights legislation in Alabama—to uncover how Google search would limit my results to cater to my personal opinions and biases. I then presented those results and the opposing view point in a visual format that referenced a Renaissance frescoe (see fig. 20).
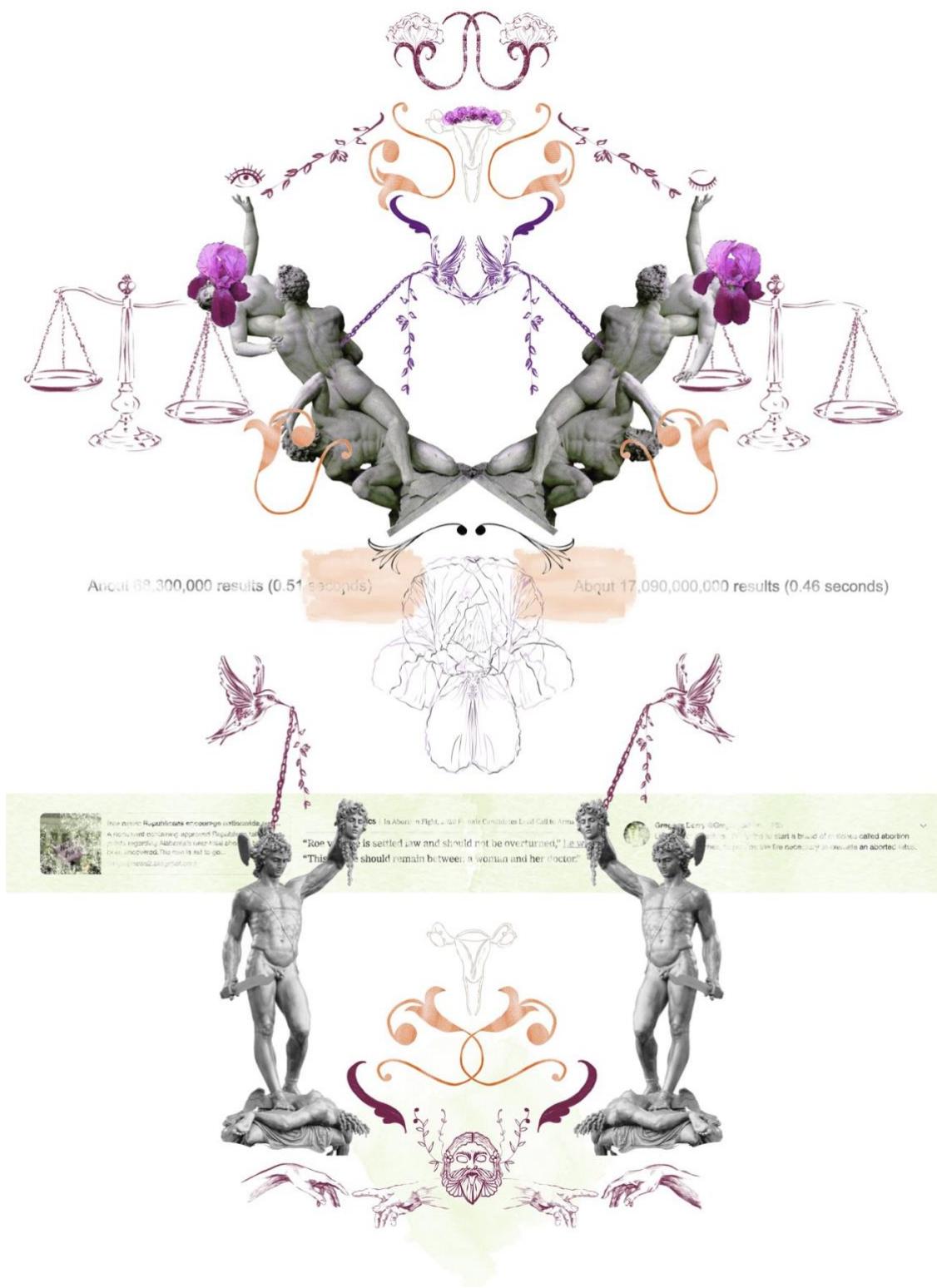
Fig. 20. Frescoes and Filter Bubbles Collage.

Algorithmic filtering through Google search held great promise in bringing us more relevant personal experiences, but the materialization of that project has imposed limitations on the kind of information to which we have access to and raises concerns about our online privacy. As Eli Pariser points out in his *The Filter Bubble*, these bubbles pose a threat to our democracies: "Democracy requires its citizens to see things from another's point of view. But instead, we're more and more enclosed in our own bubbles. Democracy requires a reliance on shared facts. Instead, we're being offered parallel but separate universes" (Pariser 5).

The filter bubble helps to syphon the enormity of information online, but these parallel views create a dangerous set of conditions. Google is widely perceived to be a source of neutral content, but personalization perpetuates bias. That bias, or the selective presentation of facts that promote a particular agenda, are definitive aspects of propaganda (Smith, Bruce).

Google has argued that it is not responsible for the output of its algorithms because results do not rely on human curation, but on the cumulative and complex analysis of signals conducted by programs. In this way, the algorithm has been likened to a mechanical gear in a watch, that helps to produce the time we see but does not influence it (Ossola). Despite this argument, when Google has been under public pressure to make updates to search outputs, the company has swiftly made edits that alter the results produced (Nobel 81).

This is what took place in 2016 when African American teenager Kabir Ali's twitter post became the subject of national media coverage. Ali had posted an image of search results for the terms "Three Black Teens" and "Three White Teens". The results on black teens produced

images of criminality in the form of mug shots, while the search for white teens produced wholesome, positive imagery. Google denied responsibility for the "anomaly" but quickly made revisions to its programming to create a more balanced representation of both groups (80).

This serves as an example of the search-result bias that becomes particularly dangerous because of the perceived neutrality of the tool. Whether these results are in fact anomalous or not, it is clear that Google, in its current incarnation, functions to perpetuate hegemonic structures as a result of its dominance as the web's most popular search engine. Its results dictate the symbol systems of modern daily life. Additionally, those symbols reflect the bias of our own perspectives, while reinforcing capitalist and political agendas through paid search and algorithmic categorization (80).

Through my independent study in Florence, I studied the hegemonic symbol systems that Google's algorithms produce through an analysis of a historically similar model, that of the Renaissance artwork commissioned by the Medici family in Florence.

Cosimo I de'Medici's commissioned a variety of pieces to enshrine his regime and through this visual propaganda, represented it as a continuation of the historical narrative. This artwork and architecture celebrated his success as the fulfillment of long-standing Florentine political and military objectives (Henk Th. van Veen 209).

The project looked at several examples of visual propaganda including the Medici family crest and it's legendary narrative; a triumphal arch in Porta al Prato that introduced Florentines to

the concept of *virtù civile* or civil virtue, associating it with the Medici family (210); and *The Foundation of Florence* painting for the Salone de' Cinquecento at the Palazzo Vecchio through which the artist Giorgio Vasari was directed to rewrite a historical narrative to falsely attribute victory to Florence in the defeat of Radagasius the Gothic King in the year 405 (106).

At the core of these works were forms of visual propaganda created through a complex system of symbols that would have been meaningful to the Florentine people. I applied a similar approach to layering symbolic meaning through the design of a collage. The structure of the collage is based stylistically on Giorgio Vasari's frescoes for the courtyard of the Palazzo Vecchio and represented the filter bubble in the form of a Google search. I chose to focus on a contemporary issue that I could research through Google and that would present distinctly opposing views. While we were studying in Florence, Alabama passed a bill creating a near-total ban on abortions and this became the subject for the work.

Upon first glance, the collage appears to be symmetrical, with one side mirroring the other; however, upon closer examination, distinctions between the left and right side become visible. For example, both sides feature an image of Giambologna's sculpture, *The Rape of the Sabine* Women; one woman's eyes are covered with a flower petal, while the other can see, but appears choked by the placement of the flower; a judicial scale attached to each woman reveals their perception of the law; and at the bottom of the image a sketch of the hands from Michelangelo's *The Creation of Adam* represent both a male and female hand extended toward God's hand.

The collage requires a careful reading and assumes that the audience will have some knowledge of the significance of the symbols and general narrative. It is, however, intentionally abstract and disjointed, in a manner that is akin to the experience of Google search. In both cases, the narrative or underlying bias is concealed.

I started my research with a Google search. I had planned to use the results of that search to showcase two opposing viewpoints – the first from the perspective of people who hope to preserve women's reproductive rights and the second depicting the views of those who support or acquiesce to this new law. But I discovered that it was very difficult for me to access search results that represented opinions that differed from my own. When I searched for pro-life articles, I was presented with more articles written from the perspective of pro-choice advocates. I was deep inside my own filter bubble.

Eli Pariser identifies this issue in describing an experiment that he conducted in 2010, when he asked two women who had similar backgrounds to perform a Google search on the term "BP Oil". Both women were white, left-leaning, well-educated, and lived in the Northeastern part of the United States. Despite those similarities, these women encountered completely different search results; one woman's search results listed information about investment options with BP while the other saw news articles about the recent spill in the Gulf of Mexico. But the most alarming aspect of this experiment is that the number of items provided for each search was different. One search yielded 180 million results and the other produced 139 million results, demonstrating that Google search results are not just in a different order but, depending on your algorithm, some articles may be omitted altogether (Pariser 2).

Within the filter bubble, we see our own version of the world. As American politician Daniel Patrick Moynihan famously said, "Everyone is entitled to his own opinion, but not his own facts" (Capital Gazette). From these examples we can see that the filter bubble produces exactly that – a set of personalized facts. In that personal realm, dominant narratives pervade, just as they did during the Renaissance; however, unlike the Renaissance population, today many of us are privileged to have access to tools and education that can help us find objectivity in our learned experience.

This independent study allowed for further exploration of these concepts and contributed to my understanding of the need for increased media literacy. Neutrality and objectivity are both necessary for making informed decisions in a democracy. If citizens are equipped with greater knowledge of the functions of our tools, we can begin to look more critically at the information we access online.

4.4 Psychometric and Speculative Design Game

In 2016, many of us awoke to a new reality that showcased how social media tools impacting our privacy and personalization had been coopted to serve political agendas. We watched this happen through Russian interference in the United States election as well as through Cambridge Analytica's psychometric data mining (Singer and Brooking 111). There is no doubt that these tools threaten our privacy and autonomy; however, this project hypothesised that there could also be great potential in what we might glean from the insights that they produce. Using speculative design methods, I created a game which mimicked psychometric data mining

techniques to reimagine how they could be used to persuade climate change deniers of the validity of climate change.

Anthony Dunne and Fiona Raby describe speculative design as being similar to "…critical design, that questions the cultural, social and ethical implications of emerging technologies. [It is] a form of design that can help us to define the most desirable futures, and avoid the least desirable" (Dunne and Raby, "Towards a Critical Design"). Speculative design provides an effective method for examining the future of the internet and media literacy, particularly as we become more aware of the threat that online interactions pose to democratic practices and institutions. The speculative design approach works well because of the focus that it places on designing not just for a customer, but for the cultural and political future that we hope to shape. Until recently, the development of the internet has focused on customer satisfaction and has failed to anticipate some of the major societal dangers that it has engineered (Singer and Brooking 51).

The 2016 US election introduced the world to the idea of a Russian sock puppet, or a person running a multitude of fake social media accounts, specifically designed to sway public opinion and affect election results. Similarly, Cambridge Analytica used a variety of Facebook apps to provide the Trump campaign with thousands of data points on 220 million Americans, all without any of the users' awareness or consent (Singer and Brooking 177).

Cambridge Analytica was leveraging psychometric data which intersects psychology with tools from Big Data. Psychometrics were used to look for patterns of Facebook 'likes'.

From just 10 Facebook 'likes' it was possible to know more about a person than their colleagues knew and from 70 Facebook 'likes' they could know more about a person than their real-world friends knew. Some of the information that they could glean included sexual orientation or whether or not the person's parents had divorced. A whistle blower from Cambridge Analytica said, "We exploited Facebook to harvest millions of people's profiles. And built models to exploit what we knew about them and targeted their inner demons" (177).

These campaigns were extremely effective at entering into people's personal narratives, leveraging their need for connection via apps, ads or exchanges on social media. In addition, they relied on homophily and the extensive knowledge of their targets' personal biases to steer people towards decisions that they believed were completely their own. As Singer and Brooking write:

> These new wars are not won by missiles and bombs, but by those able to shape the story lines that frame our understanding, to provoke the responses that impel us to action, to connect with us at the most personal level, to build a sense of fellowship and to organize to do it all on a global scale, again and again. (Singer and Brooking 21)

These developments suggest that we are heading towards a dangerous impasse, where our communication tools have left us both isolated from new knowledge and susceptible to manipulation. But speculative design offers a mechanism for reimagining the future as well as the social, political and cultural values that we hope to maintain (Dunne & Raby, *Speculative Everything, Design, Fiction, and Social Dreaming*). To explore this idea, I created a game that mimicked the psychometric research conducted by Cambridge Analytica.

The game was demonstrated as a prototype in a classroom setting during a presentation (see fig. 21). Students were divided into groups and those groups were given some background information about how psychographics work. The students were then instructed to imagine their target audience as a person who does not believe in climate change. They were then given a set of six cards at random, each of which had a post from twitter on it which had both an image and a caption. The groups were told that the cards could represent either posts with which their target person had engaged, by liking or retweeting, or posts could represent content that the target person had uploaded on twitter.
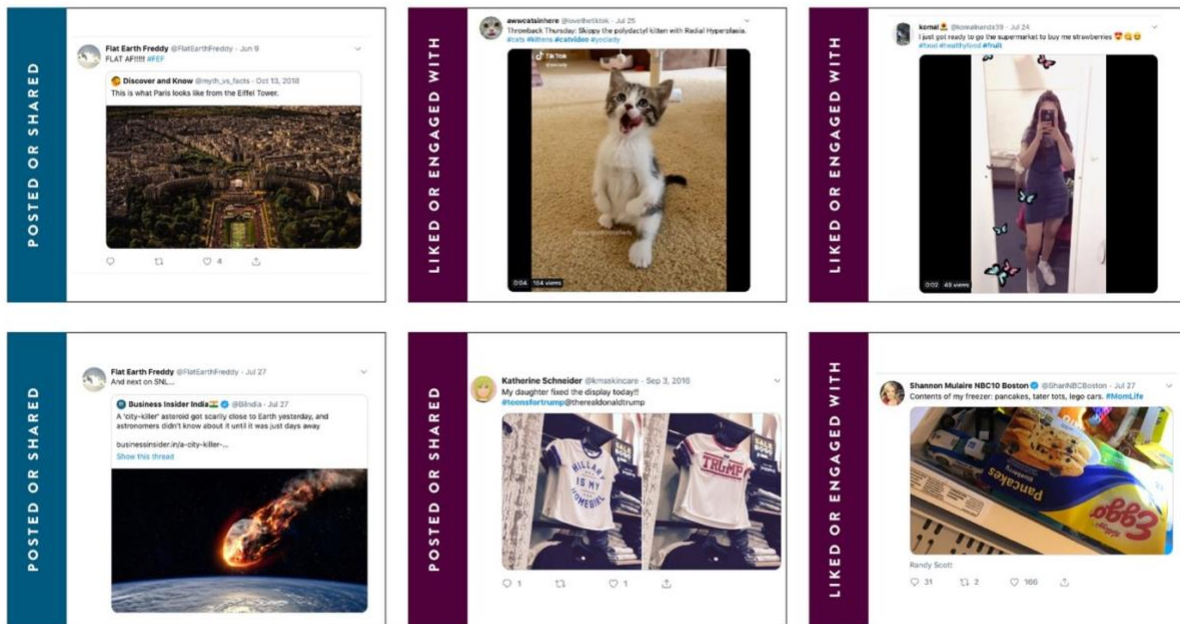
Fig. 21. A selection of cards that were used in the speculative design and psychometrics game. The two cards on the left exemplify the target individual's opposition to climate change, while the cards in the centre and right demonstrate that person's interests through tweets that they have either written, liked or shared.

Two of the six cards demonstrated the person's lack of belief in climate change; the other four were designed to exhibit other aspects of the person's character that were unrelated

to climate issues. For instance, the second set of cards included items like music and sports references, cat videos, and shopping mall selfies. The groups were then instructed to use information from their cards as a means of constructing an argument that might convince their imagined target person of the validity of climate change.

As I had hoped, groups began to analyze their imaginary person through a kind of "close reading" of the posts. For instance, one card showed the contents of a woman's freezer with the caption, "Contents of my freezer: pancakes, tater tots, lego cars. #Momlife". The group that selected this card described the person as someone who "overshares" based on the banality of the post content. They also noticed her shopping preferences and that she purchased overly-processed foods. The fact that this person identified as a mother was also a point of entry for this group and they used these pieces of information to develop a concept for a campaign that would engage her in the issue of climate change.

Each of the four groups had a slightly different approach to analyzing their cards. It would be interesting to see how providing groups with a more structured method for analysis might replicate psychometric tactics more closely and help them extrapolate information in a consistent way; however, the open framework elicited diverse and creative results. In fact, the lack of formal structure may have helped provoke precisely the type of open-minded thinking required to engage with someone who has extremely different views from one's own.

The secondary intent for the game was to demonstrate just how much is revealed from what we engage with online. The groups could easily observe patterns between the posts,

proving that it doesn't require the tools of big data to assess important aspects of a person's interests and motivations. This aspect of the game was intended to reveal some of the risks associated with the use of social media.

This type of role playing could be a valuable educational tool, exposing students to potential forms of manipulation in a controlled environment. Singer and Brooking suggest a similar approach for exposing students to image-editing software as a means of helping them understand how easily content can be distorted (Singer and Brooking 263).

4.5 Outcomes

These practice-led explorations helped to inform and add shape to the final sculptural installation and notebooks, because they allowed me to engage with ideas around media literacy in a number of formats. After completing the projects described in this chapter, I determined that the combination of installation and explanatory notebooks would be best suited to address the goals of my project. The larger installation would reveal the nature of our broader online experience, presenting the vastly complex media ecosystem hanging in a canopy over the classroom; the classroom would represent the familiar, conventional ways of accessing information and knowledge. The notebooks then offered the opportunity to clarify and provide information about citizenship and our online experience aimed to enhance the audience's media literacy.

Chapter 5 Conclusion and Epilogue:

Covid-19, Public Health and Digital Citizenship

When I began writing this thesis, my research identified the widespread adoption and use of digital technology as the most significant cultural shift of our time. I looked to Paul Howe's theory of cohort change to explain how exposure to digital tools would affect young citizens' perception of their stake in society (Howe 9). But the society about which I was writing just a few short months ago has been completely reshaped by another momentous event – the onset of the Covid-19 pandemic. This pandemic will undoubtedly impact our understanding of our stake in society for years to come, but we may not begin to fully understand the outcomes or repercussions of these extraordinary times for many years or perhaps even decades.

What is clear, however, is that the pandemic and its accompanying state of emergency has exposed the role of governance in our lives. Suddenly, we have been made aware of just how reliant we are on decisions made by our governments and can see the varied range of reactions from governments around the world. We can look to exponential graphs tracking the spread of Covid-19 as markers of our collective ability to abide by or defy public health recommendations. We have seen the fallibility of some governments' approaches and have witnessed the very real dangers of 'fake news' as it proliferates, seemingly in real-time and in alignment with the spread of the virus.

In some ways, Covid-19 has acted as a democratizing force, affecting people around the globe at an astounding rate and demonstrating our shared physical limitations; but it has also revealed some of the staggering inequities facing democracies, including the vulnerability of

those who live in poverty (Vesoulis). The instructions to "stay home" or "shelter in place" have very different implications for those who are without adequate housing. Additionally, the pandemic has revealed the social and racial disparity between those who can and those who cannot elect to work from home (Canadian Human Rights Commission).

As I complete this thesis, I have been rereading many of the texts that form the basis for my literature review and have been surprised to discover how frequently concerns around education and digital citizenship are compared to issues of public health. The most significant contemporary study about media education and online citizenship from Stanford University concludes with the statement that, "Reliable information is to civic health what proper sanitation and potable water are to public health" (Wineburg et al. 4).

Singer and Brooking write that, "Just as in basic health education, there are parallel roles for both families and schools in teaching children how to protect themselves online, as well as gain the skills needed to be responsible citizens." They go on to say that:

> As in public health, such efforts will have to be supported outside the classroom, targeting the broader populace. Just as in the case of viral outbreaks of disease, there is a need for everything from public awareness campaigns to explain the risks of disinformation efforts to mass media notifications that announce their detected onsets. (Singer and Brooking 264)

In recent months, we have witnessed the deployment of such public awareness campaigns and now have a greater opportunity to apply that knowledge to the way that we approach education

around media literacy and digital citizenship. As the literature and data that I have presented reveal, the effect of technology on politics is now inescapable. We can no longer return to a place of analogue citizenship. Today's democracies are shaped by online communications and it is the ubiquity of these tools that has rendered them so essential to the spread of information about the pandemic. But even when they are being used to positive ends, we must not forget how quickly and easily these tools can also be used to manipulate and propagate harmful agendas.

The comparison between public health and education in media literacy is now more valuable than ever, as we begin to reopen and re-evaluate the society that we lived in before, and design can play a vital role in facilitating learning about media literacy. As this paper has established, information design and data visualization can be used to convey complex ideas, and may create a more emotionally appealing point of entry for learning about media than can be provided through written reports, traditional teaching methods or checklist approaches.

But design cannot be the only tool for education in civic online reasoning. As was the case with information shared around the pandemic, there is no single approach that will appeal to everyone. For these efforts to be truly effective they must be multifaceted and we must engage in them intentionally and collectively. We must all work to educate ourselves and young people; to push for stronger civic and media education in schools; to practice democratic habits often and from an early age; and to acknowledge the risks and limitations of digital tools. As digital citizens in liberal democracies, we must think of these activities as being imperative responsibilities that will help us enjoy our rights and freedoms for years to come.

As McLuhan writes, "there is absolutely no inevitability as long as there is a willingness to contemplate what is happening" (McLuhan and Fiore 25). That willingness, coupled with a concerted effort to educate in digital citizenship, may begin to carve out a space for democracy in the digital realm.

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Appendix:

Additional images can be found in the OCAD University repository.