Young People and Mediators Appraising the Role of Design in Multimedia Information Texts

by

Allison Jane Sivak

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Department of Elementary Education
and
School of Library and Information Studies
University of Alberta

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Abstract

This study investigates the ways in which the aesthetics of design in multimedia informational materials influence young people's perceptions of information credibility. The researcher conducted in-person interviews with 12 young people and three designers, regarding a selection of five materials on the topic of the environment. Interviewees were asked about their interpretations of the materials' design elements, and the extent to which interviewees related design to the credibility of the information presented by those materials. Before the interviews, the researcher conducted a think-aloud protocol to note her own responses to the set of five materials, and a discourse analysis of reviews of the materials, from professional librarian literature, was also conducted. Responses given by the interviewees were analyzed through the framework of Rabinowitz's "rules of reading." Findings highlight the complexity involved in the seeing and reading processes, as well as the individuality of responses, based on an interviewee's own literacy practices and preferences, even as that individual learns interpretive conventions held by communities of readers and viewers. This research disputes long-held assumptions about the "universality" of communication design choices. The findings suggest that mediators of multimedia texts (such as librarians) encourage young readers / viewers to pay attention to their own affective responses when engaging with a text as a part of their literacy practices. Librarians should also ensure different formats and media design of materials are considered in the building of library collections, in order to offer readers / viewers diverse works with which they can read "for contrast, comparison, and exposure of the act of making meaning" (Drucker 62).

Preface

This thesis is an original work by Allison Sivak. The research project, of which this thesis is a part, received research ethics approval from the University of Alberta Research Ethics Board, Project Name "The Influence of Aesthetics on Young People's Trust of Information", No. 38189, May 14, 2014.

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CHAPTER ONE: SETTING THE CONTEXT

My Research Journey

Before I pursued my Master of Library and Information Studies (MLIS), I worked in a publicly-funded municipal art gallery as an administrator, writing grants, sponsorship appeals, and publicity and promotional materials. My writing was addressed to various audiences, depending on the text I was composing. These audiences included grant administrators, contemporary artists sitting on grant juries, corporate sponsors, the gallery membership, current and potential donors to the gallery, volunteers, and the "general public." My writing work was meant to persuade readers to support the work the institution was presenting, and "support" was defined differently for each audience category; for example, readers at a granting agency would demonstrate support of the gallery through annual or project funding, while members would demonstrate their support through attending exhibitions and renewing memberships. The gallery at which I worked operated in a mid-size city in the interior of British Columbia, a city in which many artistic organizations had struggled to establish themselves and to expand their audience reach. General support for the arts from individual citizens and corporations was modest, and work that held a traditionally "pretty" aesthetic tended to be most favoured by many viewers. Conceptual or "not-pretty" artwork was often met with confusion and anger from local visitors.

While local audiences (as a broad generalization) seemed to be less-interested in experimental or contemporary art, the gallery's funders tended towards the opposite. One of our major funders, the national Canada Council for the Arts, adjudicated grants through a peer jury. The peer jury was populated by contemporary artists and curators, often from urban centres. Those jurors had had greater exposure to conceptual artwork, and their understandings of art were rooted in contemporary art practice. The jurors held knowledge of trends and movements

within Canadian and international art. These jurors read proposals and viewed exhibition slides for the purpose of making the decision as to which galleries received grants. Those jurors would view our gallery's application within the context of viewing dozens of other galleries' applications, and were looking for evidence of "artistic excellence" as their major criteria.

Promotional materials aimed at the "general public," on the other hand, sought to build local support in the form of gallery visitors, members, individual donors, and corporate sponsors. We wanted to bring more people to the gallery physically, and to encourage people to demonstrate their support through purchasing memberships or donating money. Residents of the region would see our promotional materials as printed matter displayed with other local-service brochures and event posters, or in the newspaper, between regional news stories and other advertisements. Many of these viewers would tend to see the gallery promotional materials by happenstance, likely when they were performing other activities (e.g., reading the newspaper, standing in line at a coffee shop, or browsing a poster board at the recreation centre). In this situation, I would write with intent of trying to prompt viewers' intrigue in the work, and to communicate a sense of accessibility of the work and the work's ideas (as well as a sense of accessibility of the gallery itself as an institution).

My role was to be able to write various types of materials for audiences who were looking to read very different messages. My writing work began with a common set of materials: images of artwork and accompanying texts, including artist statements, curatorial statements, reviews of the work published in art magazines, analyses of the work published in catalogues or books, and biographical information about the artist(s). I would look at and read this source material carefully, considering what pictures or quotations might evoke positive responses from whomever I was writing.

I began to consider myself serving in the role of a mediator, working to bridge the concerns of the artists and their artworks with what I knew about the interests of the audiences to whom I was addressing the text. I had to consider what I believed a particular audience wanted to read and see in the material, and then write and design the text accordingly. As I wrote, I would make some informed assumptions about the audiences to whom I was addressing the text, which would then impact my writing style and image choices. For example, when writing a grant for the Canada Council, I would emphasize the conceptual sophistication of the artwork to be shown and an artist's previous professional exhibitions and accolades; my style tended towards the academic, and my language mimicked that found in art theory. In contrast, when I wrote a press release for the regional newspaper, plain language and a connection to the human, or the local, rather than an artist's ideas were more effective in attracting the editor's attention. I often found a hook in a focus on regional content of the artwork, or an artist's interesting life story.

Simmons wrote of a potential role for the librarian in postsecondary education as a "disciplinary discourse mediator," or a service provider who can provide "mediation between the non-academic discourse of entering undergraduates and the specialized discourse of disciplinary faculty" (298). Librarians have experience in and knowledge of at least two disciplines: that of their undergraduate degree, and that of Library and Information Studies at the Masters' level. Simmons suggested, "This interdisciplinarity provides librarians an opportunity to see how discourses differ across disciplines, positioning them uniquely and powerfully to help students recognize and make sense of the disciplinary differences" (299). In other words, the librarian's professional understanding of the forms, locations, and vocabularies of different disciplinary information sources allows her or him to serve as a mediator between texts and readers.

The academic disciplines are not the only environments in which a librarian can serve as

mediator. Librarians, in all library settings, work as mediators between information materials and readers, providing the intellectual and functional framework by which readers can access materials. Librarians' passive mediation is evident in the library collection of information materials, in the development of the library catalogue, and in the public promotion of information materials; their active mediation takes place on the library floor, or via the online library reference chatroom.

Although libraries share similarities with museums and galleries in their curation of cultural materials and their work to develop audiences and supporters, libraries tend to trade more strongly on a goal of universal access, than of elite sophisticate club. However, decisions made by library staff members can create doorways or barriers for different patrons. Library staff make choices about building design and decor, and decide upon the acceptability of certain behaviours (e.g., levels of noise), both of which are part of the sensory experience of a library as place. While these are not necessarily textual methods of addressing audiences, they do communicate to those who encounter our spaces.

What I have learned in my years of experience and education is that the visual, as much as the textual, communicates much to others. I intend to explore the role of visual and other aesthetic communication elements, as perceived by users, designers, and mediators of information materials.

Many institutions, not only libraries, museums and archives, are paying attention to the foregrounded role that design plays in our daily lives. We live in a time and place that has been termed "the new age of aesthetics," in which "design is everywhere, and everywhere is now designed" (Postrel 122). "Everywhere" could refer to our physical environments as well as to our cultural and informational environments; we find information framed by or contained in various

"objects," which may be print, digital, or multimedia; small- or large-scale; discrete "containers" or immersive environments. My interest in how design communicates to different audiences, along with my interest in reading, has brought me to this research problem.

I am interested in the ways in which the design of information materials works to communicate with young readers, and how young people interpret the visual and other aesthetic, as well as how they interpret the text. I am also interested in how young people's interpretations compare to those of designers, and those found within the professional librarian discourse.

Research Questions

The primary intent of this research is to ask young readers / viewers about their impressions and interpretations of aesthetic design choices, with particular focus on how design influences their trust of content. Rather than looking at this question solely from the vantage point of young participants, I believe there is value to be found in different perspectives of those who interact with materials for young people in particular capacities, including the professional librarian discourse and the perspectives of designers. Therefore, I am interested in the ways in which young people assign credibility to information materials as potentially distinct from the ways in which adults working in the librarian and design professions would assign credibility to those same materials. My five research questions are drafted to take a step back and consider whether patterns or insights on design and affect are more generally visible to librarians, and how these might contrast with the general intentions of designers of materials for young people.

1. How does the professional discourse of librarianship consider the role of aesthetics and heuristics, both generally and in response to these specific information items?

2. How do individual young people recognize, interpret, and discuss heuristic cues in specific information materials?

3.   How do various aesthetic presentations of information materials affectively influence

individual young viewers / readers?

4.   How do the aesthetic elements of information designed for young people influence

young individuals' trust of the information content?

5.   How do designers recognize, interpret, and discuss heuristic cues in specific

information materials?

The five research questions above were written in order to isolate specific aspects of inquiry into

the intersections of design, information, and reading / seeing. However, analysis of the interview

data taught me that questions 1 through 5 should be considered more holistically in my analysis.

I use the framework of Rabinowitz' "rules of reading" to more appropriately pursue my

questions, beginning in Chapter Five.

Description of the Project

In this project, I selected five examples of information materials, and reviewed them,

using a think-after protocol to note my observations on how the design elements communicated

within those materials. To explore the discourse of mediators and more specifically librarians, I

use the language of professional reviews as a proxy and analyze the role of aesthetics in the

reviews of the materials selected for use in this study. I then interviewed twelve young people

and three designers, and asked them to respond to those same information material examples. In

addition, each interviewee brought a book, game, website URL, app, or other media example,

which we discussed before reviewing the materials I had brought. I then analyzed the three sets

of language primarily through the frame of Peter Rabinowitz's *Before Reading,* a work that maps

conventions used by readers of literature for sense-making.

Purpose and Significance of the Study

An attempt to investigate the impact of design on an individual's perception of information must be refined into a smaller research question in order to be feasible. I propose to research aspects of *credibility* variously assigned by librarians, young people, and designers to information across formats, and to explore how the contextual aesthetics of the "information object" influence that credibility for the different groups. I analyzed the professional discourse regarding selected information materials in both print and digital formats, conducted my own review of those materials, conducted discussions with pairs of youth about those materials, and conducted interviews with designers about those materials.

Much scholarly and professional work on IL seeks to gauge levels of information literacy (IL) competency of identified groups (e.g., students in secondary or post-secondary studies), often against the established *Information Literacy Competency Standards for Higher Education* written by the Association of College and Research Libraries. My research differs from these types of studies in that it does not seek to evaluate the assumptions or responses of my research participants; rather, it aimed to document participants' discussions about the aesthetic properties of specific information materials. My analysis of their discussions looked to identify how design elements influence (or do not influence) professional librarian discourse about the materials, as well as participants' attention to the materials, and whether it has influence over the trust that reviewers, young people, and designers assign to the content of those materials.

I have several research aims for this project. Most broadly, I am examining some of the ways in which young people use affective cues to determine the credibility of information, and to examine some of the ways in which young people talk about design aesthetics. I am also interested in how the discussions and terminology used by young research participants regarding

the aesthetics of information design may converge or contrast with discussions and terminology provided by the professional discourse of librarians, as well as with the discussions and terminology provided by designers. Within these broad aims, I have several other objectives. These include, at a basic level, the identification of some of the affective cues that young people observe in a set of materials. This work also investigates the importance that some young people place on affective cues and on the aesthetic choices made in information design, and where these cues and choices sit in the array of decision-influencing factors for some young people. I sought to compare the responses of young people to the responses of designers and by reviews that were written for professional librarians.

I believe that my research helps to clarify how aesthetics connect to particular factors of looking at, seeing, and reading information materials; for example, how they attract and hold some people's attention, or prompt particular kinds of affective and/or behavioural responses (such as suggesting readability). Through my reading of published reviews, sessions with young people, and interviews with designers, I have worked to understand the convergent and divergent understandings of elements found in specific examples of graphic design between these perspectives.

Definitions: Concepts and Contexts

Issues of information are necessarily multi-disciplinary, and it would be possible to draw on a very extensive range of approaches; the following selection gives some sense of the richness of scope that is both possible and useful. I will now briefly define several terms that have relevance to my research in this section, briefly, and provide a greater narrative of how these areas of study support one another in the Literature Review section.

Seeing

A major facet of this research is in the subject area of *seeing*. Fogg and Tseng note that seeing connects with trust; they state that surface credibility is a form of credibility that a perceiver assigns to an information source (42). It is a judgment that perceivers make based upon their own scans and interpretation of the visual properties they see in that information source. Burke suggested that seeing is highly subjective and depends upon perspective when he wrote, "Every way of seeing is a way of not seeing" (138). Moore further suggested that seeing is not a matter of simple sensory perception, but that it involves learned skills:

> The alternative interpretative view of perception enables us to envisage visual skill as a truly critical component of artistic sensibility, neither generic nor archetypal, but a learned, cultivated skill, comprised of observation and discernment within the traditions, materiality and ideas of a particular medium. Teaching visual skill on this basis recognises that there may well be cultural resonances and common influences between related disciplines, but these are determined by values that change differentially not by permanent truths, and that understanding what we see is neither subjective nor objective, but interpretative, based on our experience of the physical, material world around us. (42)

Design

Simon defined design as a process by which one creates "courses of action aimed at changing existing situations into preferred ones" (129). Design is, "by nature an interdisciplinary, integrative discipline" (Friedman 508); it is "a generalizable discipline that may as readily be applied to processes, interfaces between media or information artifacts as to tools, clothing, furniture, or advertisements" (Friedman 519). It is "both an old and a new discipline,"

in which efforts to develop design-specific research have only been actively published in the last fifty years (Folkmann 13).

This research focused primarily on graphic design, which is "the process of choosing and organising words, images and messages into a form that communicates and influences its audience" (Design Council, "What is Graphic Design?"). The Design Council of the United Kingdom stated several sub-elements that can be included under the heading of graphic design: typography, imagery, corporate identity, packaging graphics, signage, information design, editorial design, and digital design. It serves as visual communication ("An Introduction to Graphic Design").

It is perhaps equally informative to consider what graphic design is not. The Design Council draws a distinct line between the category of advertising as opposed to graphic design:

> According to Newark, advertising is solely concerned with the promotion of a product or brand, while design usually has a broader remit, including the 'organisation and articulation of many of the products and brands themselves'. In this organisation, graphic design takes on informational and categorising duties too complex for straight advertising. Another difference is that part of the advertising process is nearly always to generate its own content (as well as its form), whereas graphic design is more often concerned with the presentation of content, rather than its creation. Such distinctions are certainly not hard and fast, which is perhaps why we arrive at the encompassing phrase 'visual communication' ("An Introduction to Graphic Design").

Information Design

The International Institute for Information Design defined the professional design work

of their membership as "the defining, planning, and shaping of the contents of a message and the environments it is presented in with the intention of achieving particular objectives in relation to the needs of users." Readers with a reasonable level of internet and print access in contemporary western culture will encounter a seemingly infinite amount of information and information sources. Each of the information "packages" or sources available to readers is at least slightly different; consider the difference between articles published in a scholarly medical journal, versus a glossy, public-health brochure. Publishers may adhere to certain design conventions for particular kinds of materials. Take for example, a reader looking for information on Type 2 diabetes, with which he has been diagnosed. Is he looking for stories about how it feels to live with diabetes? Or is he looking to understand his government's policy on financial coverage of an insulin pump? Perhaps he is looking to investigate alternative therapy treatments for Type 2 diabetes. As I write down these three different information needs, I have snapshots in my head of how the *container* of each information product might look and feel: an online message board with contributions by diabetes patients, a PDF white paper on a health region's website, or glossy booklet published by a health authority. I envision particular styles of the *object* that I think would be most likely to contain particular types of information. However, there is some slippage between format, style, and content: a glossy booklet could easily include stories of living with diabetes or notes on medical coverage.

The three information examples I have listed above are but a small sample of the number of different formats and styles in which a reader might encounter health information. Each one represents a series of communicative choices made by people who have written and designed each example. For the writer(s), the choices involve word usage, reading level, writing style, point-of-view, tone, and text length, to name a few. Designer(s) make choices about font style,

font size, text density, use of images, size of images, placement of images and text against one another, and document measurements. It is not surprising, then, that information design is defined as drawing upon many different disciplines, including typography, graphic design, applied linguistics, applied psychology, applied ergonomics, and computing, to name a few (Walker and Barratt). Information design appears to be as interdisciplinary in its foundations as is design generally.

User-Centred Design

      User-centred design is a design approach where the creators attempt to design products or information "that enhance the way people work, learn, and play—rather than forcing them to conform to new or unfamiliar skill sets and learning methods" (O'Grady and O'Grady 25).The wants, needs, and behaviours of the end user serve to focus the designers' decisions as they work. Optimally, this design approach is based on research with people who represent some of the important characteristics of the implied end-user of the design work. O'Grady and O'Grady note, "Projects are developed through cycles of testing, analysis, and refinement. Multiple iterations often provoke questions and solutions previously unforeseen by the design team" (25).

Heuristics

      Due to the way in which readers have most frequently encountered styles of information design in the past, we assume that certain styles (e.g., a glossy brochure as information meant for a consumer) are the *conventions* of how that kind of information is presented*;* moreover, we learn to understand those conventions as *heuristics*. Heuristics have been succinctly defined as "efficient cognitive processes that ignore information" (Gigerenzer and Brighton 2011), and which tend to focus on the cues presented by the information container to help make quick

assessments of whether one should pay greater attention to information held within the container. Sundar defined heuristics as the explicit and tacit signals that a user recognizes, which allow her to make a judgment without cognitively considering other characteristics of the information source (74).

Aesthetics

Another facet of my research relates to aesthetics and aesthetic responses. The term "aesthetics" has been defined variously, in light of different philosophical explorations, but one definition that is quite useful for this project is that from Dufrenne, when he suggests that the aesthetic experience is "generally understood to be a form of emotional reaction to a perceived object" (416). Lavie and Tractinsky connect visual aesthetics in the context of human-computer interactions (HCI) to "positive effects of visual design" (280). The authors further distinguish visual aesthetics in HCI from artistic or philosophic perspectives on aesthetics, noting that the roots of their definition of the concept come from applied research (278). Some scholars have noted that "aesthetic experiences are tied to the particular, invoke the senses, command an immersion of the whole self, and result in a heightened form of engagement" (Boehner, Sengers, and Warner 12:2). Hassenzahl noted that the concept of aesthetics "is primarily empirical and is characteristically descriptive (i.e., 'what *is* considered beautiful') rather than normative (i.e., what *should* be considered beautiful')" (233).

Address

An additional area that relates to this research is that of address. All forms of communication, including writing, graphic design, and speech, are addressed to a particular audience, whether that audience is a single individual or a group assumed to possess certain

characteristics. Ruecker, Sinclair and Radzikowska refer to this in the arena of design as the "visual position" (6). The writers make a clear distinction between the generic-sounding "best practices" in design and usability, and that of visual position: best practices suggest a universality of address, whereas visual position requires a greater specificity regarding characteristics of the audience for a work of design. The authors do acknowledge that best practices are continuously evolving within the world of design, as designers aim to to address "the visual culture of the user" (Ruecker, Sinclair and Radzikowska 6), meaning a presumption of an individual or group accustomed to particular signs and symbols that can be said to make up a "visual culture". Some of the importance of understanding address here, then, is making visible the idea that information is not unmediated, and that choices are made by authors and designers based upon the idea of the reader(s) and mediator(s) they have in mind.

Credibility

One of the major questions involved in my research work is that of credibility. The Oxford English Dictionary defined "credibility" as the "capacity to be believed or believed in." A review of the research on credibility suggests that there is no singularly-accepted definition of credibility (Hilligoss and Rieh 1469). However, it has long been accepted that credibility has at least two sub definitions that help to specify its meaning: expertise and trustworthiness (Hovland, Janis, and Kelly 103).

The definition of expertise is straightforward: "Expertise refers to the extent to which a speaker is perceived to be capable of making correct assertions" (Hovland, Janis, and Kelley 21). In contrast, Ye and Emurian state that the concept of "trust" itself has been difficult to define clearly. They note that trustworthiness is an abstract concept, and may be used interchangeably with other terms, such as confidence. There is some agreement that the concept of trust is

multifaceted in its dimensions, touching on cognitive, behavioural, and emotional concepts (Lewis and Weigart 971). Ye and Emurian present a review of various disciplines' development of the concept of trust, including philosophical, marketing, psychological, and management perspectives. Common to the definitions they review are four elements of trust. First, all definitions assert the existence of the trustor (the party that trusts) and the trustee (the party that is trusted). Either party can be composed of "persons, organizations, and/or products." Second, there is an aspect of vulnerability on the part of the trustor, or the willingness to take a risk. Trust results in a "produced action," which could be tangible (e.g., lending money to a trusted friend) or intangible (e.g., a decision made to extend trust to the trustee). Finally, trust is very subjective, "directly related to and affected by individual differences and situational factors" (Ye and Emurian).

Efferent and Aesthetic Reading

Reading theories contribute important concepts to my research, particularly Rosenblatt's theories of reading stance: efferent reading and aesthetic reading. She suggested that one of these two stances predominate when a reader approaches a particular text at a particular moment in time ("The Literary Transaction" 268). In the process of efferent reading, a reader "will narrow his attention to building up the meanings, the ideas, the directions to be retained; attention focuses on accumulating what is to be carried away at the end of the reading" ("The Literary Transaction" 269). In contrast, aesthetic reading allows "a much broader range of elements will be allowed to rise into consciousness, not simply the abstract concepts that the words point to, but also what those objects or referents stir up of personal feelings, ideas, and attitudes" ("The Literary Transaction" 269). It is extremely important to note that a single text may be read from either of these two stances; Rosenblatt firmly dismisses any suggestion that the text itself

determines a reader's response: "We can read aesthetically something written mainly to inform or read efferently something written mainly to communicate experience. Our present purpose and past experiences, as well as the text, are factors in our choice of stance" ("Literature" 445).

CHAPTER TWO: LITERATURE REVIEW

Bringing Together the Disciplines

My literature review will focus on bringing together the various subject areas that I have previously defined in this proposal, to demonstrate how they weave together to strengthen an understanding of how adult designers and young people engage with and interpret information materials. Information materials are complex creations, appealing to various sensory and cognitive capacities of their end users. Numerous decisions must be made by creators and designers before the materials become accessible to end users. Mediators and young people, as selectors and/or end users also make numerous decisions in terms of choosing whether to purchase or engage with the materials. At the same time, new information materials are constantly released in the consumer market (whether free or for-purchase). Our information environment is continuously populated with content and information objects.

Within this literature review, I will outline some of the ways in which varying disciplinary literatures offer various handles by which to grasp aspects of this information material credibility problem. My goal is to demonstrate that an interdisciplinary approach, while complicated in its presentation, is a particularly appropriate way of working to understand the equally complex information environment and its ever-developing and growing contents. My point will be that a single-subject or single-method approach is not adequate for a highly complex communication format.

Cues, Cognition, and Information

The ubiquity of design as an aspect of communication merits greater attention than it has received to date within the LIS literature. Librarians and LIS researchers have predominantly

focused their work on the cognitive processes of the information search process (ISP); a foundational exception is the researcher Carol Kuhlthau, whose work on the ISP also emphasized that students regularly experienced affective responses during their search processes (240). However, many fewer subsequent publications have investigated the role of affect than those focusing on the role of the cognitive processes.

Information comes with a set of cues that suggest it can be trusted or not, according to the end reader / viewer. Cues are also called heuristics (Sundar 74), and can be defined as the signals that a user recognizes, which allow her to make a judgment without cognitively considering other characteristics of the information source. The motivation to pursue evaluation of an information source--what Chaiken called "systematic processing"--is influenced by different factors. People have two different modes of processing: the heuristic and the systematic. The heuristic method of processing relies on cues for judgments that are stored in the memory of a viewer or user. It is informally known as the "top down" method of processing. The systematic method of processing relies upon cognitive judgments, and the active evaluation of the information or object at hand, in order to come to a judgment (Chaiken 752). This is informally known as the "bottom up" method of processing. Clearly, an individual will build up a suite of heuristics over her or his lifetime, based upon other information objects she or he has encountered and judged. An individual will build stereotypes based upon her or his experiences. The more she or he has encountered particular stereotypes, the stronger will be the resulting heuristic cue for the person.

Chaiken also discusses the conditions under which a recipient relies upon heuristic processing and when that recipient may go to the greater work involved in systematic processing. She noted that systematic processing becomes more likely when a recipient's involvement in or

concern for the issue related to the message is high (763). Also, if the recipient believes that her opinion is likely to be influential on the consequences she experiences from the message, she may be more likely to engage in systematic processing (Chaiken 754).

Fiske and Taylor categorized individuals as "cognitive misers," a term that suggests the conservation of energy and brainpower when making judgments, causing information users to rely frequently on the available heuristic cues rather than approaching all pieces of information with the intention of analyzing its usefulness for their particular need or concern (qtd. in Chaiken 753). The concept of the "cognitive miser" has some connection with the finding that young people tend to choose the materials they would like to continue to engage with based on the salience of the material to their interests, and the ease with which they could access the material without experiencing frustration (coming from characteristics such as difficult vocabulary or complexity of game controls) (Mackey 86).

Some heuristic cues are culturally or socially based. For example, the Oxford English Dictionary (OED) is a source that holds great credibility for many English-speaking people. Its credibility is based upon several factors. One is its long history, having been published and updated continuously since 1884. Another is its source or pedigree, as it is published by the Oxford University Press, the largest university press in the world. There are several other obvious and perhaps tacit reasons for the OED's authority (credentials of the editorial board, its non-profitable status, the perceived status of other users, etc.). A high school student may not necessarily use the OED for her definition search; Googling "define: credibility" results in a hit list of several dictionary sources (Merriam-Webster, *The Free Online Dictionary*, dictionary.com), which do not include the OED. However, she may use a print dictionary in her school library or home, or may be using a school or library computer which has a subscription to

the pay-per-view OED. She is likely not considering the credibility of the OED at even the cursory level at which I do above; rather, she is probably taking the category of "dictionary" as being credible enough for her definition needs.

In the professional literature, librarians have expressed anxieties about how people navigate their ways through the information available to them for their personal, academic, and work purposes. Librarians articulate concern that young adults may not be gaining skills that will allow them to navigate effectively through the information world, so that they can determine what information and information sources are trustworthy.

Reading and Literacy Practices

Rosenblatt drew upon decades of work with readers when she stated, "Reading, we know, is not an encapsulated skill that can be added on like a splint to an arm" ("The Literary Transaction" 273). Almost two decades after Rosenblatt, Wysocki and Johnson-Eilola critique an approach to literacy which speaks only to behaviourist skills:

> When we speak of 'technological literacy,' then, or of 'computer literacy' or of "[fill-in-the-blank] literacy," we probably mean that we wish to give others some basic, neutral, context-less set of skills whose acquisition will bring the bearer economic and social goods and privileges [...] But—and (unfortunately) of course—this notion of discrete skills is only a partial view of 'literacy.' The bundle of meanings and implications that comes with this word is, we argue alongside many other writers, much denser and messier (352-3).

Lanham, a composition scholar, noted that "clean information is not the destiny of humankind. Clean information is unnatural and unuseful. Information always comes charged with emotion of some kind, full of purpose. That is why we have acquired it" (19). Here,

Lanham suggests that charged information holds an attraction for a reader by virtue of its author position or bias, its attempt to persuade a reader, or its reach. Affect is an integral part of the reason why a reader may seek out information, and may be the reason that information grabs a reader's attention.

Mackey noted,

> Attention is shaped by experience and fuelled by affect; it manifests itself in different parts of the body, in the limbic system of the brain, and in the conscious processes of thought. Attracting, sustaining and directing attention is a major thrust of any text, whether designed for aesthetic, informational or commercial purposes, or any amalgam of the three. (10)

One difference between information materials that take overt advantage of digital or multimedia presentation options and those that rely on more traditional design choices is simply that with multimedia, it can be easier for a viewer to *see* those choices. "The design of a product invites us to attend to it in a particular way, to pay a certain type of attention to it. Design tells us not about stuff per se but what we think about stuff. It is the interface where the stuff we dig out of the earth's crust meets a fully human reality of feelings, attitudes, and ambitions" (Lanham 18).

Moore considers the small details of an information object to contribute to its overall aesthetic:

> When we read a book, examine a painting, or walk through a landscape, clearly we are looking at and experiencing different things. But, in fact, one medium is no more or less visual than any other. The words or numbers on the page, the brush marks on the canvas, the texture and form of the landscape all have spatial dimensions. They are all things we can see or imagine. How much sense we make

of what we are looking at depends very much on our knowledge, experience and

familiarity with the medium of our inquiry, whether this is abstract art or

nineteenth-century literature, contemporary physics or neo-gothic follies. It also

rests on how much notice we take, how casually or keenly we choose to observe.

(43)

Sundar warned, "a chasm exists between our expectations about and the effects of digital

media, and between our perceived needs and actual use of their offerings" (76). He used the

example of digital media designed for young people, in which he has observed much attention to

those affordances which are meant to "dazzle" young users, but which do not result in long-term

interest, learning, or use (Sundar 76). This example suggests that it is important to avoid the

mistakes of technological determinism when considering the design of media for young people

(as well as for adults): the development of a particular affordance in the design of information

material must work effectively, and on par with the development of the information material's

contents. Simply addressing user attention is not going to guarantee interest or use. Heuristics do

not necessarily adhere to a standard of credibility or design, and are not "proof" of the quality of

the content to which they are attached.

However, it does seem that heuristics have notable and immediate impact upon media

readers / viewers / users. Sundar noted,

In the multistage model proposed by Wathen and Burkell, the first stage that a

user goes through for judging the credibility of online information is an evaluation

of surface credibility, which involves a consideration of such surface

characteristics as appearance/ presentation and information organization, as well

as interface design elements such as interactivity, navigability, and download

speed. This is true even for highly motivated users of primarily informational sites

such as health sites. Users are known to not only reject or ignore Web sites that

have poor design appeal, but also to mistrust them. As Metzger concludes in her

review of research, people rely most heavily on design/presentational elements for

judging information credibility and quality even though this is not one of the "five

critical evaluation skills recommended" for judging credibility. (76)

Credibility and Information

Regarding the concept of credibility, Fogg and Tseng have suggested that the credibility

of a piece of information is based upon its components that allow a person to believe it.

However, it is an individual "reader" (or viewer) who must decide or agree that the information

is believable. Credibility is therefore assigned by an individual to a piece of information, rather

than credibility being a characteristic of that information (Fogg and Tseng 40). The researchers

identified four types of credibility; presumed credibility, reputed credibility, surface credibility,

and experienced credibility (Fogg and Tseng 44). It should be noted that the researchers' work

here focused specifically on the credibility of computers, in which they included both the

computer's functionality, software being run on the computer, and the information presented on a

computer screen (e.g., in a software program, or via the internet). For the purposes of my work, I

am interested most in the information presented on a computer (as well as in a print or hard-copy

format).

Presumed credibility is based upon the extent to which a perceiver believes someone or

something because the perceiver has a set of assumptions that prompt belief in the source, for

example, believing that one's friends are telling the truth. (Note that "information source" can

refer to a person or information materials in various media.) Reputed credibility has to do with

the labels or "markers" placed upon the information source. These labels can include titles such as an esteemed title (e.g., "Doctor") or award (e.g., Nobel Prize), or some other form of visible certification (e.g., SecureSite on a webpage or approval rating from a magazine such as Consumer Reports). Surface credibility pertains to the visual characteristics of an information source, which could include such as examples as the visual design of a webpage, the clothes worn by an individual, or the material characteristics (physical weight) of a handheld device (Fogg and Tseng 41-2). Finally, experienced credibility is based upon the direct experience of a perceiver, who may trust the decisions of her financial adviser based upon that adviser's successful performance (Fogg and Tseng 42). Fogg and Tseng suggested that experienced credibility "may be the most complex of the four types [...]. Because it hinges on first-hand experience with the computer product, such credibility includes a chronological component that leads to a dynamic of computer credibility" (43).

Fogg and Tseng also make the important point that credibility is not static, but can be lost or gained over time, as a perceiver works with the source multiple times or over a period of time (43). The perceiver's interest in or motivation to work with a source multiple times, however, will vary.

Similarly to Fogg and Tseng's definition of credibility as a quality that must be assigned by an individual reader, Tractinsky noted the "apparent subjective and context-dependent nature of aesthetic processes" (Encyclopedia). Norman suggested

> that aesthetic perceptions and evaluations can be explained by considering
>
> cognitive and emotional processes at three different levels, which he termed
>
> visceral, behavioral and reflective. Visceral reactions to stimuli in the
>
> environment (including aesthetic stimuli) have developed to a large extent through

evolutionary mechanisms, are performed very rapidly at almost instinct level, with

little or no cognitive processing. (qtd. In Ortony, Norman, and Revelle 188)

Thus, reactions at this level may be automatic. The other two levels are characterized by

increasingly more elaborate and distinct motivational, emotional and cognitive structures and

processes, as well as by slower reactions to stimuli, tendency towards optimal responses (as

opposed to satisficing) and greater individual variability (Ortony, Norman, and Revelle 188).

Tractinsky noted that the process of designing visual aesthetics, and the process of

evaluating them, are both cognitive and affective undertakings (1072). Designers may start to

understand evaluation through the examination of their affective response to a design, and using

that response to help construct the ideal reader / viewer of that design. When we talk about

design, we need to talk about specific examples of design. We have to talk about "the local."

Design and Reading

Before considering the ways in which design may impact an individual's critical

response, it is important to remember that any presentation of information involves a series of

design choices. A page of prose text has involves several design choices: font style and size,

paper, size, leading, paragraph end (e.g., ragged or justified). A book has a hard or soft cover

which may be rough or smooth, flat or embossed. The pages of a book have a particular weight

that a reader feels when turning the page. However, the book is a ubiquitous object, in which

many of the design choices do not feel foregrounded; they "fade" into the background as if they

simply *exist*, they were not *chosen*. Further, not all choices made for the book have to do with

evoking a particular affective response; many of those choices are made by virtue of economics,

such as the cost of paper or the artist's fee for cover design. Some of the choices may also follow

on tradition or history; for example, the size or look of a series book is likely to follow on the

decisions made for the first volume.

In the case of the book, its conventions are so well-established that we do not necessarily have to pay attention to its format. Readers understand how the book technology works, meaning that format and interaction do not draw readers' attention to *how* the book is working. This leaves a reader to concentrate on the information inside. With respect to other formats, such as a multimedia game, the design of the game may command greater notice from a reader / viewer / player, as she figures out how to interact with the game. Regardless, as Lanham noted, "The design of a product invites us to attend to it in a particular way, to pay a certain type of attention to it" (18). A reader's / viewer's attention is composed of both cognitive and affective aspects.

The question of how aesthetics can influence readers / viewers is quite complex. Druin noted that children are often not consulted in the design of systems or products for which they are the end users, using the example of digital libraries (21). Adults can often make assumptions about design for children without actually involving children in the process, whether adults are designing children's spaces or software (Druin 23).

Interestingly, it appears that the investigation of aesthetic preferences of adults is also difficult to summarize.

> In studying this category, we naturally look first at design guidelines and insights. However, the very broad scope of design possibilities, the creative nature of design work, and the almost unbounded relationships between design elements make it extremely difficult to isolate specific design aspects which may be considered aesthetic or which may influence aesthetic perceptions one way or another. (Lavie and Tractinsky 238)

Within the context of design, one function of aesthetics is that of communication, signalling to

readers / viewers that an object or surface is worth their attention and time: "aesthetic function is a composite that includes attracting viewers, holding their attention, and compelling their trust and respect" (Ruecker, Sinclair and Radzikowska 2). Folkmann noted that "when design artifacts are noticed and appreciated, it is more often for their aesthetic surface qualities than their practical or functional ability to solve more or less complex or well-defined problem" (27). Tractinsky hints at the aesthetic connection to *surface* when he writes, "Aesthetic impressions are fast, enduring, and consequential" (1073). The construction of those surface impressions may involve a great deal of thought, research, and drafting. The prevalence of design in our personal records and communications hint at the extent to which other types of information that we encounter has also undergone significant design before its release.

In the area of the digital humanities, some make the point that "aesthetic factors become intrinsically woven with issues of functionality" (Ruecker, Sinclair and Radzikowska 1). The authors further state that "a significant function of aesthetics in [the context of computer interfaces and visualization tools] is to inspire the user's confidence" (Ruecker, Sinclair and Radzikowska 1). However, there is no neat formula that can predictably enhance confidence; aesthetic design choices may encourage certain emotions, but "the aesthetic is to be regarded as a relationship between subject and object rather than an essence that can be physically grasped, determined, and circumscribed" (Folkmann 27).

While researchers may write about the purpose of the aesthetic in general terms, functionally, the design of a document or website is constructed through a designer's specific choices regarding font, colour, image, layout, and other elements. The practice of graphic design employs any number of visual conventions that help to guide the attention of a reader / viewer as she reads or looks at the designed text. Designers become familiar with conventions in part

through formal education, and in part through "a continuum of past designs," and current conventions "have inherited their historical and cultural patterns of meaning from previous resources but they primarily extend them" (Eisenlauer and Hoffmann 1-18).

Design conventions may have "historical and cultural patterns," but scholars have only recently begun to investigate information design; this is no surprise, given that "Digital expression has heightened our expressive self-consciousness, both of images and sounds" (Lanham 143). The sheer volume of available information, formatted and presented in various ways, has prompted readers to become increasingly aware of how the design of that information prompts certain kinds of attention (Lanham 143). Given that the study of information design is a relatively recent area of investigation, it is useful to employ research on another discipline of meaning-making and communication for guidance on how to frame my present research. The work of Rabinowitz on the "rules of reading," and how those rules attract and direct a person's reading attention, is the frame I have chosen for my work.

Rules of Reading

The work of Rabinowitz provides a useful frame with which to examine how readers may determine how to read and see a text. As he notes, in the introduction to his seminal work *Before Reading*, "[...] understanding--in the sense of being able to paraphrase--always involves the ability to *ignore"* (19). A person reading cannot pay attention to all the details of content and composition included in a textual work, much less all of the aspects of the visual and/or aural in a multimedia work. Rabinowitz emphasizes the reality of reading when he counters the critical expectation that a reader will observe and retain all elements of a written text (19). The need for focus, or as Rabinowitz calls it, simplification, in order to even be able to perceive (20), must employ "some organizing principle, some hierarchy of attention and importance" (20).

Rabinowitz codified four "rules" that help a reader to accept "the author's invitation is to read in a particular socially constituted way" (22): rules of notice, rules of signification, rules of configuration, and rules of coherence. I will now describe these rules more fully.

Rules of notice relate to the places in a text where a reader is prompted to pay greater attention, and subsequently, notice more. We see rules of notice at play is at the first and last sentences of a paragraph, for example, or in elements that are stressed against the regular-font text, such as words in bold or italic (43). These rules work in terms of contrast, a principle that is as well-suited to the process of design as to the process of writing; contrast is as much visual and spatial as it is textual.

Rules of signification "...tell us how to recast or symbolize or draw the significance from the elements that the first set of rules has brought to our attention" (44). Once we are paying attention to a place in a text as readers, we make sense of it through the rules of signification that we have learned over time. Rabinowitz's examples here include symbolism, metaphor, or points of view. He noted that rules of signification allow us to assume that characters have psychologies, or that their actions are prompted by something deeper than simply appears on their surface actions or dialogues. Rules of signification help a reader to see past surface and read more deeply--or what that reader presumes to be more deeply.

Rules of configuration speak to how a reader might recognize patterns of "literary features" within a text, and primed by her repeated viewing of such groupings, a reader can then understand "how to assemble disparate elements in order to make patterns emerge" (44). Configuration is the piecing together of what is noticeable, to assemble the greater building blocks upon which a reader can ultimately make a whole meaning from a text. A reader's perception of patterns can help him to understand the ultimate design of a text, a precursor to

understanding the work as a whole.

Rules of coherence help a reader to create a whole from all of the content she reads in the text, helping her to "read a text in such a way that it becomes the best text possible" (45). She can then give names to what Rabinowitz calls "textual disjunctures, permitting [her] to repair apparent inconsistencies by transforming them into metaphors, subtleties, and ironies" (45). Or perhaps, being able to ignore some of the inconsistencies that do not fit within her overall understanding of the text.

These rules do not follow the chronology in which I have described them above, and indeed, "Reading is a more complex holistic process in which various rules interact with one another in ways that we may never understand even though we seem to have little difficulty putting them into practice intuitively (Rabinowitz 46). Rabinowitz also notes that not every category is employed by every reader with every text, but rather that "[...] virtually *all* readers apply *some* rules in each of the four categories whenever they approach a text" (43). The rules of reading are therefore somewhat flexible for readers, useful in the context that each reader does read somewhat differently from any other reader.

Before Reading focuses only on textual conventions that writers employ in order to tell a reader how to best read the book in hand. It is not difficult to consider how a designer might use Rabinowitz's principles; design is also a means of simplification to allow for a user to be able to perceive a work. Design can make a number of elements of a text explicit, including hierarchy and organization, symbolism, and pattern. Rules of notice particularly lend themselves to being used in design, as Rabinowitz noted, when he detailed the use of italics as a means of emphasis. Rabinowitz's book is interesting to consider with respect to multimodal works in part because of the ways that design elements can test or potentially extend his rules of reading. Rabinowitz was

clear in his book that he was focusing on texts, and primarily literary texts, although he certainly

makes mention of several examples of popular literature. Additionally, at the time of the

publication of *Before Reading* in 1988, multimodal texts were certainly not commonly available

to readers, or studied to the extent to which they are now studied. While literary texts may still be

predominantly writing-based, so many other kinds of texts--particularly "non-fiction" or

informational texts--integrate writing and visual design to a great extent.

Further, design conventions and applications are certainly more familiar to and explicitly

named and discussed by readers in general than they have ever been in Western society. The

seemingly endless number of examples of visual-textual (as well as aural) texts available via the

Internet is one obvious driver of this increased familiarity. Consumers have easy access to design

programs on personal computers (or even online software), and "photoshopping" is a commonly-

used verb people use to talk about image manipulation. I argue that design is a foregrounded

characteristic in much of the reading young people (and adults) pursue. Designers and

interpreters (both types), are likely to be quite skilled in their use of Rabinowitz's rules, at least

tacitly; this does not mean they apply those rules in a uniform fashion. Eisenlauer and Hoffmann

posit that while design conventions do employ previously-established patterns of meaning, they

also extend those patterns in an ongoing process of modification (1-18); perhaps readers /

viewers also stretch the conventions in their interpretations.

Roles of Designer, Mediator, Reader / Viewer

It is now useful to consider the three roles which I have designated as relevant to my

research: the designer, the mediator, and the reader / viewer. These roles do not represent "the

local," but they help to bring the focus of this proposal into a more localized, specific context.

The social context of the ideal designer is concerned with how to best present the

information, across the varied social contexts of readers. She can be assumed to possess a clear idea of what to create, and to draw from a rich body of knowledge. The ideal designer knows that the client, design situation, and user are all partners in the process of creating meaning from the designed text, but knows the user is the most important player in this triad, because it the user who must engage with the text. She can assist the client with knowledge gaps they may experience, so that she can help them understand what will be most effective for their target users. She has access to "real users" and can use their responses to the design in progress to help refine the design. She considers the ethics of design. Her purpose is to facilitate and "thoughtfully order" information, and catch and regulate the attention of readers. She is an "economist of attention" (Lanham 16). She knows that how she presents the information can enhance or downplay aspects of that information--and can tell more than the content itself (Brown and Duguid 201). The real designer must negotiate relationships between the client, user, and the design situation; the client is the most important player in this triad. She may or may not consider "real users," either in person, or via aggregate data / marketing profiles. The designer may not actually interact with real readers. Time, the client's desires, and financial constraints are major factors in the final realization of the design. This designer may or may not be personally interested in the work she must do. Note that these characteristics of an ideal designer are applicable regardless of context, whether the designer is a freelance professional or an in-house staff member.

The real designer creates or articulates knowledge in the process of design. She may experience surprises in the process, at which point she must "reconsider her basic assumptions" about the information she is organizing (Lowgren & Stolterman 22). Her design work may involve collage, montage, assemblage, sampling, and remixing in creating information (Cham

20).

The ideal mediator works to serve both the interests of the reader, as well as considering what a reader "needs" socially or educationally. While she is one of the most powerful players within this framework, as someone who can help readers find, access, or engage with texts, that power is focused around the reader she is working with. At the same time, her role--or even her presence--is hard to predict; she may not be present with the reader.

However, if she is present with the reader, she accepts the author's invitation to participate in the interpretive community. She can serve as a source to assist the reader in what the reader wants or needs, as well as how the reader is engaging or not engaging with the text; she encourages the reader's educational or social development through texts. She is able to extract information from the text and its design. She may be part of the "sequestering" of the reader (e.g., in tutoring, teaching, library visit, etc.). If present, the ideal mediator seeks out what is appropriate for the reader. The ideal mediator is probably an adult or a more capable peer, who has more knowledge than the reader, or who can help find it. She is confident in the reader's responses, and the materials she helps the reader access. She is there to guide the reader where necessary. The reader trusts the ideal mediator.

The real mediator works within constraints of social standards, school / library policies, personal beliefs, and personal knowledge. She may know much or little about the topic of the text, the format of the text. She may experience any range of emotions when working with the real reader: anxiety about her lack of knowledge or ability to choose, worry about the reader finding something "inappropriate" or not "educational" enough, frustration with the lack of materials she can find or access (either physically or online). This mediator cannot necessarily focus fully on the reader's questions, interests, or needs, and so may choose the first item

available.

The real mediator could be a parent, teacher, librarian, peer, or software. The reader may not trust this mediator or vice versa. The real mediator may block access to certain materials due to constraints of money, filtering software, lack of accessible sites for materials, or outdated technology. She is there to negotiate the text with the reader, and because she herself is also a reader, may have a very different response to the text than other readers or mediators.

The mediator role is relevant particularly when considering young readers; information materials are very often chosen for young people, in many areas of their lives. Take for example, the information texts they read in school or the materials they find in the public or school library; these information materials will have been selected by curriculum experts, teachers, and/or librarians. Online material that students access may very well be "mediated" by internet filters that have been installed by their parents, the library staff, or the school staff. The search engine itself can be seen as a sort of mediator, in its attempts to match user keywords with relevant material. Any selection made for young people, whether it be by a human or by an algorithm, holds some assumptions about who those young readers are, and what those young readers are looking for.

The following section will contrast two "versions" of each role: the ideal reader / mediator / designer, and the "real" reader / mediator / designer. Presenting the two versions of each will reveal some assumptions that we often make about the people who design, choose, or read information materials.

The ideal reader is the reader who engages effectively with the text as intended by the author or designer. This reader responds to the cues consciously placed by the author or designer, and can read in an efferent or aesthetic way, depending on what is thought "most effective." The

ideal reader engages fully with the text. The ideal reader of a particular text has a social context

which has allowed her to build the repertoire which helps her read "the best text possible"

(Rabinowitz 45). The reader can read this "best text possible" through the content, but also

picking up on the cues by the design or presentation. She thinks about the text's content, and

about the feelings she has experienced during the reading, and actively constructs meaning out of

these experiences that is similar to the intentions of the author and designer. She shapes her

reading practice and desires to the text, able to "subordinate ... mind and heart" to the text

(Booth, qtd. in Iser 115). She sees the complexity that the author shows through the text, and

uses this complexity to create meaning as well. The ideal reader's attention is ready for the text

at the time of reading, and her motivational structure is sympathetic with the text (Lanham 173).

She is physically, mentally, and emotionally "sequestered" with the text during her engagement

with it (Lanham 263). Her emotions may vary throughout her experience, but she has the

purpose of learning what the author and designer want to tell, or accepting the "author's

invitation to read in a particularly socially constituted way that is shared by the author and his or

her expected readers" (Rabinowitz 22). The author's identification of the ideal reader places

constraints around what the author can then write (Rabinowitz 22-23).

The real reader, in contrast to the ideal, is highly individual, and unpredictable in how she

engages with the text. She is a reader "over which an author has no guaranteed control"

(Rabinowitz 20). She brings her own experiences, material realities, scaffolding, attention, and

desires to a text, and these factors impact how and why she reads, and how and why she engages

(or does not engage). Particular aspects of her social context or background will allow the

"information to register" or not (Brown and Duguid 139). She does not necessarily see the same

complexity that the author or designer has seen in creating the text (Mackey 162). Her reading

experience will be impacted by experience with previous schemas, even if she does not consciously "apply" or "choose" such schemas when approaching the text (Douglas and Hargadon). Her attention is not a commodity (although Lanham uses the metaphor of the "scarcity" of attention in contemporary Western culture), but is an adaptive pattern, or behavioural inclination. Attention is part of her attempt to read as the author intended, to (at least temporarily) join "a particular social or interpretive community" (22). The real reader comes equipped with a motivational structure that may either facilitate or impede her engagement with the text (and/or her immersion in that text) (Lanham 14). Her attention may not even be consistent throughout the reading of the text, and may shift away from the text in what Bresnick called the "relation of daydreaming and reading" (qtd. in Mackey 10).

She may or may not "finish" the text, but she will complete it to her desired end point. Material factors impact her access to and reading of texts: slow or fast internet connection for online multimedia, computer at home, filter on web browser installed by mediator. She may have two different types of materials she will read privately and publicly (whether the "public" is composed of her friends, classmates, parents, teachers, or an online community). The real reader's purpose is varied, situational, and unpredictable.

Summary

These varied sections of the literature review are meant to reinforce to readers that my research on information design and perceived credibility is by necessity, an interdisciplinary project. For many people, I suspect the process of seeing and reading a text to evaluate the text's trustworthiness is a tacit process, during which readers make quick decisions based on any number of factors. I believe it is important to slow down that tacit process, and to ask readers to approach it more explicitly, in order to try and understand its true complexity; we know from

decades of reading research, and from recent work in design, that sometimes what seem to be the simplest acts (reading, seeing) indeed continue to challenge us, and to evade simple explanation. By detailing previous scholarly and professional work on the facets of the seeing, reading, and interpreting processes that I have observed in my research, I hope to reinforce that an interdisciplinary approach offers much to understanding what seem to be simple human acts.

CHAPTER THREE: METHODS

A Theoretical Framework

My approach to my research is based in a constructivist stance. Constructivism places the learner at the centre of a learning process, rather than placing the instructor or the material at the centre. Constructivism states that knowledge is socially constructed (Duffy and Cunningham 174; Jonassen 29). Learners symbolically create knowledge, developing their own representations for concepts they are learning, and for their own interpretations of those concepts (Duffy and Cunningham 174; Jonassen 31). However, as Crotty noted, it is not the case that people as learners construct our interpretations of the world out of thin air; we are all a part of the cultures in which we have grown and in which we currently live. One's culture serves to focus one's attention on those symbols and meanings which hold greater cultural weight. We understand phenomena that we encounter in the context of our familiar cultural symbols and meanings (Crotty 54). Constructivism posits a relativist ontology, in which "Realities are apprehendable in the form of multiple, intangible mental constructions, socially and experientially based, local and specific in nature [...] and dependent for their form and content on the individual persons or groups holding the constructions" (Guba and Lincoln 110-1).

The constructivist paradigm also foregrounds the relationship and exchanges between the researcher and participant(s) as the site at which both parties create the findings. Guba and Lincoln noted that the local nature of social constructions mean that they "can be elicited and refined only through interaction *between and among* investigator and respondents" (111). The roles of both parties in creating the research findings support my understanding of young people as "social actors in their own right, rather than pre-adult becomings" (Ellis, "Researching Children's" 111).

Research conducted within this paradigm can be evaluated by criteria of trustworthiness and authenticity (Guba and Lincoln 114). Aspects of trustworthiness are credibility, transferability, dependability, and conformability. Guba and Lincoln described the criteria of authenticity as fairness, ontological authenticity (which allows the development of personal constructions), educative authenticity (which involves a broader and/or deeper understanding of others' constructions), catalytic authenticity (which spurs action), and tactical authenticity (which allows for, or empowers action) (114). These quality criteria speak to the research as a whole, rather than to the quality of aspects of the research (such as the interpretive analysis). Another perspective on the evaluation of qualitative research comes from Spencer *et al.*, who suggested four aspects of understanding the value of the research conducted. First, that it is contributory, or advancing a wider knowledge or understanding. Second, that it is defensible in its design, providing a research strategy that can address the questions which are being asked. Third, that it is rigorous in its conduct, demonstrating both systematic and transparent collection, analysis and interpretation of the qualitative data. Lastly, that it is credible, "offering well-founded and plausible arguments about the significance of the data generated" (Spencer *et al*. 20).

The worldview of constructivism is, I believe, particularly cogent to a multimedia information world, in which new configurations of text, image, sound, and other elements are continuously designed in efforts to communicate to people. The multimedia information environment can be, at its most interesting, an exploratory environment for learning. When the publishing world was print-based, and held in the hands of a much smaller group of individuals and companies, the amount of information that could be produced and disseminated was much smaller than is possible today. Established publishing conventions and presentation modes were

also limited, creating a smaller pool of recognized sources for libraries to collect. Certain formats could be stated as clearly authoritative (for example, the encyclopedia), and trust may have been easier to confer due to the limitations of the material. The exponential growth of information materials means that librarians may not be able to rely upon long-standing rules for credibility—or at the very least, must consider the question of credibility for themselves more frequently than they have ever had to consider within public and academic libraries. In this environment, the professional librarian must serve as both "expert" and "student," learning how to discern credibility of many new sources and publications. In this environment, we are all learners, regardless of our levels of educational attainment.

At the same time that I assume a constructivist stance towards my research, I acknowledge that I see several points within my research upon which it is important that I focus my attention. I present two "mediator" points of view: one for myself as a professional librarian examining the same information materials that I am showing to the young people, and the other for librarian professional discourse, in the form of published reviews. Certainly, the young people as "learners" present the reader point of focus. The designers of information materials for young people provide the final focus point, with respect to the intentions and assumptions that these designers hold and make when they are creating materials. I am interested in questions of how young readers / viewers interact with information materials in different media.

ROLE	SOURCE	METHOD
Mediator	Researcher	Think-after protocol
Mediator	Reviews of five selected information materials	Textual review
Reader	Young people, ages 11-18	Interviews and think-aloud protocol
Designer	Designers of information materials (with some experience designing for young people)	Interviews and think-aloud protocol

Table 1. Roles and data sources

I have examined young readers' / viewers' interactions with the intentions and assumptions of those who review materials and those who design materials for young people, and with that of professional librarian discourse, as well as with my own interpretations of information materials in various media. Four different points of focus in my research require different methods of qualitative inquiry. How will those methods be drawn together? A discussion of the researcher as bricoleur is therefore relevant.

According to Kincheloe and Barry, "bricolage works to embrace and learn from various modes of knowledge production, including philosophical inquiry as well as historical and literary modes of scholarship" (15). The authors further define what they call "a central epistemological and ontological assumption" upon which the research method bricolage rests: "the domains of the physical, the social, the cultural, the psychological, and the educational consist of the interplay of a wide variety of entities – thus, the complexity and the need for multiple ways of seeing advocated by bricoleurs" (Kincheloe and Barry 24). Here, bricolage is presented as a method most applicable to research situations that are recognized as being highly complex. Attempts to understand a research problem as a faceted problem will be useful here. In fact,

Kincheloe and Barry state that all research questions are multifaceted, but have been forced into

delineated disciplines for reasons of Cartesian rationalism and academic tradition:

> Simply put, no problem is only an educational, a psychological, or a social
>
> concern. We encounter everyday life as a seamless whole – only our research
>
> strategies and disciplinary approaches fragment and isolate portions of the world.
>
> In such rationalistic fragmentation relationships are destroyed and contexts are
>
> ignored. (41)

This observation resonates with the interdisciplinary nature of the research questions I am

examining, and as I have presented them in this proposal. The research which I am proposing

does not rest solely within visual studies, information studies, reading studies, or education;

rather, it draws from the relevant work in each of these disciplines in order to more accurately

understand where they all intersect. Indeed, Kincheloe and Barry state plainly that "bricolage

signifies interdisciplinarity" (50).

In addition, bricolage holds a neat parallel to contemporary perceptions of the

information universe. As I have noted previously, the amount of accessible information grows

exponentially, and media tools and technologies allow for the continuous design and redesign of

this content. Librarians (and laypeople) often lament what feels to be an ever-expanding

information universe, which does not feel that it will slow down adequately so that we may

understand it more fully. This metaphor resonates with the following description of the work of

bricolage:

> As part of a larger process that is ever changing, the reality that bricoleurs engage
>
> is not a fixed entity. In its impermanence the lived world presents special
>
> problems for researchers that demand attention to the nature of its changes and the

processes of its movements. In this dynamic context bricoleurs work to avoid pronouncements of final truth. (Kincheloe and Barry 24)

Artist and design scholar Roymeico Carter has made special note of the use of bricolage as a tool for research in the field of visual arts, calling for a re-visioning of historic criteria of aesthetic evaluation to better approach a changing world, in which people can see "paintings move, dancers defy time and gravity by using computers and digital sensors, buildings being walked through and experienced before they have even been built, and music made without the use of voice or instruments" (231). The slippage between disciplines demands a more faceted view. This relates to Crotty's own statement on the bricoleur's assembling of methods and objects for her sustained attention during research.

Research in a constructivist vein, research in the mode of the bricoleur, requires that we not remain straitjacketed by the conventional meanings we have been taught to associate with the object. Instead, research invites us to approach the object in a radical spirit of openness to its potential for new or richer meaning. It is an invitation to reinterpretation. (Crotty 51)

Smith suggested a step that a researcher can take in the early stages of considering research with young people, namely, "to be aware of her/his own understandings and preconceptions of childhood and children. Such awareness can contribute to a greater flexibility in methods and data collection" (qtd. in Gallagher 67). Although constructivism presents a scenario in which both the researcher and the research participant(s) co-develop the meaning of the research data, this paradigm of equality does not discount the real power dynamic that exists in the world between adults and youth. In general, young people's social, economic, legal, and intellectual agencies are all mediated by adults. This fact underscores the importance of an adult

researcher paying particular attention to all the possible points during the research that could impact a young participant in a negative, or positive, way. Gallagher suggested several ways through which a researcher could support a young person's involvement in the research that could mediate the experience positively for that young person. These include: making the research fun for the young person, providing variety and choice in the questions the researcher is asking, and providing variety and choice in the tasks the researcher is asking the young person to complete (89).

Ellis suggested that researchers can alleviate potential feelings of pressure to perform in the interview by asking open-ended questions, rather than those to which a person could answer simply "yes / no". Open-ended questions provide more leeway for the respondent to speak without being "directed" by the researcher's own assumptions or terminology (Ellis "Researching Children's" 117). Open-ended questions also serve to avoid multiple prompting questions, which may give young people the feeling that their original answer isn't "good enough" (Ellis "Researching Children's" 117).

The concerns and interests of an adult researcher are not necessarily those of the young people with whom the researcher is working. "It is easy to assume that children will respond well to being listened to, no matter what the topic of discussion. But remember that exploring their views on a particular subject may be your agenda rather than theirs" (Gallagher 129).

Interpretive inquiry is one method of data analysis that is well-suited to working with young people. Schleiermach noted that one of interpretive inquiry's basic tenets is that of the holistic approach to interpretation (qtd. in Ellis "Researching Children's" 113); rather than fitting a participant's stories into a predefined set of categories, the researcher must be open to a participant and her / his stories as a whole, in order to avoid prematurely and erroneously

"breaking apart" the participant's experiences to provide "evidence" to support the categorization. Librarians have a tendency towards considering library patrons in categories, and have some record in the professional literature of making assumptions about those categories (e.g., that young people are 'better' with technology than older people; that "Millennial" youth have grown up expecting everything to be handed to them). In the context of researching with young people and new media, then, researchers from the field of LIS come from a context in which categorization of individuals into groups is a basis upon which services are built. It is particularly important for the LIS researcher to be conscious of this context from which she comes, and to be particularly attentive to the stories that young people tell in a research project, listening closely, rather than dividing them into preconceived categories.

Interpretive inquiry holds to several key ideas that help guide the researcher in her attempts to conduct rigorous, quality research that can meet criteria of trustworthiness and authenticity as defined previously. Interpretive inquiry requires close reading, but not artificially narrow reading. Developing meaning with the participants' narratives means that the researcher must recognize that a participant may move fluidly between part and whole due to that participant's emic understanding of her language and stories; the researcher, starting as an outsider to the participant's perspectives, must work to interpret from part to whole and back again, as fluidly as the participant does.

Ellis uses the metaphor of interpretive inquiry as "unfolding spiral," a series of loops that may visually represent individual instances of data collection, and that allows the researcher to move back and forth along the spiral, returning to prior understandings and reviewing them for new possibilities ("Interpreting Results" 485). The forward movement of the loop represents interpretation based in researcher's "forestructure," or preconceptions, pre-understandings, or

prejudices that she carries. The backward arc serves to challenge the forestructure, examining gaps or absences, contradictions, or inconsistencies that may influence and enhance interpretation. The unfolding spiral of interpretation is concerned with relationships of interpretations to data, looking not for "the answer," but for further questions and new understandings in a dynamic process (Ellis "Interpreting Results" 486).

Several interviews for the study were carried out in one program room at a branch of the Edmonton Public Library. In some cases, with participant and guardian permission, I interviewed young people at their homes; guardians were either present in the interview rooms or in the home.

My research involved three separate categories of participants: myself, young people, and designers of information for young people. I reviewed the information materials that I showed to the young people, noting my own interpretations of those materials for comparison to what the young people state. I also investigated the discourse of the professional reviews.

I worked with twelve young people: eight individually and two in pairs, for a total of ten sessions. All young people were between the ages of 11 and 18 at the time of the interviews. This age range was chosen for the study because the participants have, by that age, been exposed to designed information in many different areas of their lives: through home and school, through friends and media. These young people have some information materials chosen for them (e.g., in school, by their parents), but also likely have had practice in choosing their own information materials, and perhaps even making information materials (e.g., creating videos, music, or writing for audiences from their social circles, classrooms, or beyond). Further they are more likely to be able to articulate their observations and opinions on information objects than people aged ten and under. I interviewed three designers of information objects to ask about their

purposes for their design choices. My inclusion criterion was simply that the designers had to be adults working in the field of graphic design, who have some experience with designing materials for young people (defined as those users between the ages of 11 and 17).

Attempts to recruit participants were made through speaking to five different classes in two different public schools in the city of Edmonton. However, I was not able to recruit participants through this method; my visits to classes gave a brief overview of the research project, and although a number of young people asked questions and took information / consent forms to take to their parents/guardians, I received no further contact from those young people. I attribute this to the fact that my presentations were made to students in early June, a busy time for all students and teachers, and my brief presentation may have piqued a person's interest, but that person's interest may have been lost in the shuffle of end-of-year activities.

I ultimately relied on snowball sampling for my recruitment. As I spoke with adults about my research, several would state that they knew a young person who might be interested in participating in the study. Those first young people who participated also named others whom they knew, who would be interested as well. With the designers, I recruited participants through communications with a local chapter of a graphic designers' association, and by snowball sampling in addition to those first contacts. Table 2 provides a brief listing of the research participants; I narrate more information on each participant in Chapter Five.

ALIAS	AGE	NOTES	INTERVIEW LENGTH
Elliot	11		70 minutes
Ivan	11		57 minutes
Owen	11	Alicia's brother; mother sat in on interview	78 minutes
Alicia	15	Owen's sister; mother sat in on interview	78 minutes
Devon	15	Allan's brother; father sat in on interview	75 minutes
Allan	11	Devon's brother; father sat in on interview	75 minutes
Sarah	11	Rhonda's sister (separate sessions); pilot session	36 minutes
Steven	18	Participated in pilot with modified set of materials; second interview conducted with final set.	125 minutes
Tara	11		92 minutes
Edward	13	Reviewed first four materials (session interrupted)	48 minutes
Rhonda	17	Sarah's sister (separate sessions)	71 minutes
William	16		89 minutes
Miranda		Designer	67 minutes
Ella		Designer (worked on same youth health publication as Henry at different time)	126 minutes
Henry		Designer (worked on same youth health publication as Ella at different time)	66 minutes

Table 2. Research participants.

Data Collection

I conducted a search of the professional discourse (reviews and recommendations) regarding my information objects and analyzed the few reviews of the materials I was able to locate. I was a research participant myself, having reviewed the information materials that I showed to all my participants, and I noted my own interpretations of those materials for comparison to what the young people state. I based my interpretations on the criteria that Bishop notes in her work on material selection (see Appendix B, Protocol #3).

The sessions with young people ranged from 36 to 126 minutes. I asked each one to bring one example of an "information object" they particularly liked; I defined *information objects* as books, websites, or games, for example. I asked them to speak about their own choices. I then asked the young people (in pairs, if there were two and individually if I was working with one) to review a number of information materials on the subject of the environment. I explained that I wanted them to conduct a think-aloud process, in which they speak while they were looking through each of the materials, to express their thoughts as they noticed their individual responses to the text and design of the materials. I asked the three designers to review the same information objects and conduct the think-aloud protocol. For my own review of selected information materials, I took notes as I looked and/or worked through through each of the materials. I used Camtasia 10, a screen capture / recording software to record all data collection sessions, and video recorded the sessions as well. All interviews and recordings were transcribed.

To the role of the researcher, I brought my professional and personal experience within the fields of contemporary art and library and information studies. In my professional work as an administrator within contemporary art galleries, I experienced a role of mediator, in which I often found myself working to "translate" information written or presented in one voice, style, or

modality into a voice, style, or modality that could more effectively address an audience different from the creator of the information. One example is that of writing educational materials on an experimental artwork for young audiences, to deepen the audience's interest in a work and try and encourage a meaningful experience between the young viewer and the work on exhibit. Another is that of writing promotional materials on an artwork to grab and hold the attention of arts journalists for the local media, to encourage coverage of the gallery and its exhibition. A third is that of writing a broad-based overview of the gallery's exhibitions for the upcoming year, and attempting to highlight their intellectual and artistic rigour and thematic cohesion, to convince the granting jury that this gallery deserved funding for the upcoming year of exhibitions.

As a professional librarian, working with students and faculty in a post-secondary institution, I saw many parallels between my previous arts administration work and that within an academic library. Although it was the job of the students and faculty to engage with the published content which the library purchased, my role still involved some kinds of translation between the library's systems that "contained" scholarly information, and the people who needed that information. Libraries are obviously familiar institutions to those who study and work in the academy, and yet, those people often needed support in using the library systems. With faculty, my work could involve training them to navigate particular article databases or the "translation" of a new library service into language that was meaningful to faculty; for example, talking about how a citation manager would save faculty several hours of time at the point of manuscript submission if they would spend one hour on learning that citation manager before beginning their writing. With students, in addition to the kind of "translation" work I just mentioned, I would teach them to approach information with a critical and metacognitive stance; that is, to

understand that scholarly information had a series of characteristics that made it quite different from information that they used in their daily lives and even in their high school assignments. As a professional librarian, I learned further how to listen to the questions and frustrations of faculty and students and to consider what was important for them when they were trying to use library systems.

An important aspect of my role of researcher in my work, then, was to ensure that I watched carefully and listened closely to the young participants and designers when we are in an interview session, and when I was reviewing their recordings and transcripts for the purposes of interpretation. Ellis writes of the forward-backward arc that is essential within the process of hermeneutical interpretation of qualitative data ("Interpreting Results" 485).

The role of the researcher in interpretive inquiry is that of the "passionate participant" (Guba and Lincoln 112); that is, the researcher does not act as an objective observer whose own concerns and constructions are distanced from the research project. As Guba and Lincoln noted, the qualitative researcher acknowledges that her research is interactive and responsive to the situation or experiences being researched, and that the researcher's economic, social, cultural, and gendered position is an influencing factor in the design, completion, and analysis of the research (105). In addition, I needed to acknowledge my own training and experience as a mediator in order to expand my alertness to the constraints of the mediator role, and to raise my awareness beyond these constraints.

Methods With Participants

I examined approximately twenty examples of information materials on the topic of the environment. In the two pilot sessions I conducted, I used a total of eight materials. The works used in the pilot session were:

1. Alba, Jessica. *The Honest Life: Living Naturally and True to You*. Emmaus, Penn.: Rodale, 2013.

2. British Broadcasting Company (BBC). *Climate Challenge*. 2007. Web site. Accessed 22 June 2013. http://www.bbc.co.uk/sn/hottopics/climatechange/climate_challenge/

3. Carson, Rachel. *The Sea Around Us*. Boston: Houghton Mifflin, 1955.

4. Shell Global. *More Energy, Less CO2?* Video. 13 Aug. 2012. Accessed 22 June 2013. http://www.shell.com/global/environment-society/environment/climate-change/more-energyless-co2.html#

5. Suzuki, David and Boyd, David R. *David Suzuki's Green Guide*. Vancouver: Greystone / Douglas & McIntyre, 2008.

6. Strawbridge, Dick and James Strawbridge. *Self Sufficiency for the 21st Century*. New York: DK, 2010.

7. Smithsonian Centre for Learning and Digital Access. *Prehistoric Climate Change and Why it Matters Today*. Smithsonian, n.d. Web. 15 Oct. 2015.

8. *The Story of Solutions*. dir. Fox, Louis. perf. Annie Leonard. Free Range, 2013. Web. 15 Oct. 2015.

After two sessions, I concluded that eight works were too many; trying to review and view all of them meant a research session took over two hours, and my pilot participants lost patience. Knowing that I would be recruiting young people between the ages of eleven and eighteen, I estimated that ninety minutes would be a reasonable length of time for which to expect their participation. I also replaced some of my original information material choices with alternate works. I removed two print books: *The Sea Around Us* was a dog-eared paperback from the 1950s, and the content in *The Honest Life* was only tangentially related to the environment. I

kept *Prehistoric Climate Change*, as it was clearly created for young people, but removed the

BBC Climate Challenge site, as too much of one format. I also removed the online video, *More*

Energy, Less CO2?, as I believed it to be too easily recognized as an advertisement. I found an

app, *Atlas by Collins,* which filled an important format gap in my list. I ultimately chose five

materials for my final examples to use in the research: two print sources, one website, one online

video, and one app. Sample images from each of these materials can be seen Chapter Four. The

final list is as follows:

1. Suzuki, David and Boyd, David R. *David Suzuki's Green Guide*. Vancouver: Greystone /
   Douglas & McIntyre, 2008.

2. Strawbridge, Dick and James Strawbridge. *Self Sufficiency for the 21st Century*. New
   York: DK, 2010.

3. Smithsonian Centre for Learning and Digital Access. *Prehistoric Climate Change and*
   Why it Matters Today. Smithsonian, n.d. Web. 15 Oct. 2015.

4. *The Story of Solutions*. dir. Fox, Louis. perf. Annie Leonard. Free Range, 2013. Web. 15
   Oct. 2015.

5. Harper Collins. *Atlas by Collins*. Computer software. *Apple App Store*. Vers. 2.3.1.
   theOTHERmedia. Web. 27 Feb. 2014. <http://atlasbycollins.com/>

The materials' approach to the subject varies, as some of my selections are scientific, and others

focus on consumer or lifestyle choices that impact the environment. I chose specific materials for

both their individual characteristics, and for how they create a small "collection" of materials.

When choosing an individual resource, I considered whether the material was print or digital,

colour or black and white, large-format or small-format (for the print materials), and illustrated

or primarily textual. I also considered the interactive affordances each material offered to a

reader / user (e.g., an online game as opposed to an online video). Collectively, I reviewed my collection of materials to determine the extent to which they contrasted to one another. I wanted to ensure that each material example was reasonably distinct from the others I chose.

My current professional position as a librarian, and my past work as an art administrator held in common the responsibility of serving as a mediator between cultural works and the readers and visitors whom my workplace served. In my research, I wanted to further investigate the role of mediator. However, one tension is that in this context, I am the researcher as well as serving as a mediator. It was therefore useful for me to rely upon established guidelines for material evaluation. I took the criteria that I found detailed in several library texts regarding selection criteria for materials in school libraries and young people's library collections.

The literature on material selection for library collections offers criteria that were useful in this review of the materials I have selected for my research. Building a collection, on the other hand, is a process in which the librarian considers how different materials make up a whole, in terms of depth, coverage, scope, and balance. Collection development is "a complex, decision-making process and not a simple gut-level 'I like this' response" (Bishop 61). Bishop further stated,

> Two fundamental questions must be considered. Is the format appropriate for the content? Does the presentation effectively address the users' needs? When evaluating an item's presentation, consider these questions: What is the idea (intellectual content)? How is it presented? Does the medium provide the most suitable treatment for the idea? (61)

I collected the data relating to the mediator role through two methods: first, I looked through each of the five examples, and made notes each time I felt my attention "caught" by an

aesthetic element of the material. After I had finished looking through one of the items, I then conducted a think-after protocol, and wrote my notes more fully as a narrative of my progress through the item. Then I looked at the next item. I conducted the reviews and the think-after protocol over the course of two days.

I used reviews of my selected materials as proxies for the professional librarian discourse regarding selection, or mediator role. As I read the reviews, I wrote a textual analysis as I noticed what these reviews mentioned, and what they did not mention regarding these items. Published reviews of the materials resulted in the most limited dataset, as the original reviews were quite brief, and I did not find reviews for all my materials.

For my methods with young people, each young person who expressed interest in participating in this research received several documents. One was an information letter addressed to the young person with an assent form, the second was an information letter addressed to her / his parent(s) or guardian(s) with a consent form. Both forms are written at a grade 4 reading level. Both forms were returned to me, signed, before the session began.

At the beginning of each session, I reminded them that that I was audio and video recording the session, as well as taking notes. I reinforced to the young participants that if they didn't want to continue with the session, they were free to say this, and we would stop the session. None of the young people requested we stop before the session was completed, with the exception of Edward (age 13), whose session in his home was interrupted by a friend dropping by.

Prior to meeting, I asked each of the young people participating in my research to come to the pre-arranged session prepared to show me an "item" that they particularly liked: a book, a game, a website, or an app. I asked each person to talk about the item that she or he has brought,

to briefly discuss why this item appeals to her or him. After that, I explained that I was going to show some materials about the environment. I asked each person to tell me what his or her level of interest was in the environment or environmental issues. I asked the participants to follow a "think-aloud" (if there was one interviewee) or a "think-together" (if there was a pair of interviewees) method while they looked at the items in front of them. "Think Togethers" are "small-group concurrent verbal reports" (Branch 150). Branch noted, "Researchers can combine Think Alouds, Think Afters, and Think Togethers with additional data-collection methods such as observations, audiotape recordings, and/or video recordings to enhance the overall picture of adolescents' experiences during instructional activities" (149).

The think-aloud and think-together protocols are well-documented as methods which enable the collection of rich datasets, allowing for complex understandings of readers in various contexts. Afflerbach and Johnson stated that think-aloud protocol analyses present a number of important pathways for analysis. Protocols include interpretations and evaluations of texts, emotional responses to texts, and various readers' anticipations of meanings they assume will be found within the texts (85-6). Afflerbach and Johnston's constructive responsivity theory combined "the scope of reader-response theory with the specifics of modern cognitive theories" (87). Readers monitor aspects of the texts they are reading, and monitor their own processing of those texts (88).

In their analysis of the use of think-aloud protocols as a method of reading research, Pressley and Afflerbach noted several strategies that they advised researchers to employ, in order to address potential problems with the method. These include capturing detailed characteristics of the research participants and of the texts, clear directions on how to think-aloud during the session (including exact phrasing of initial directions and of in-session prompts), and detailed

reporting of how the researcher conducts the data interpretation (120-2). Kamil *et al.* suggested that a detailed level of reporting of the verbal report and the protocol analysis method not only substantiates validity of the researcher's interpretations, but also contributes to greater knowledge of the method. Depth of knowledge regarding protocol analysis is very important, "as it is increasingly applied to the complex problem spaces that are replete with the interactions of readers, tasks, texts, and intervening variables" (105). Kamil *et al.* have suggested that protocol analysis has been focused upon cognitive aspects of reading, hence the emphasis on such triangulation methods as additional reading assessments to verify the validity of the data. The authors did state that affect and motivation are revealed through readers' think-alouds, even when they are not the primary focus of a researcher, suggesting that "a systematic approach to their investigation and the systematic variation of instructions to subjects and requests for the focus of their reporting might contribute to new insights about reading" (Kamil *et al.* 109).

I conducted two pilot sessions with young people in order to see how my proposed questions and sample materials worked within a set period of time. This helped me to refine my list of materials slightly, and to be mindful of the number of items I chose to show, in terms of length of session.

With each designer, I asked them bring an example of a work they designed with which they were particularly pleased, and to discuss that work for a few minutes. Then I asked each designer to review the information materials previously described in this proposal. I asked them to look at the materials and talk about the heuristics they noticed, to discuss their interpretations of the design choices made with those materials. I was not specifically seeking out designers of environmental materials for young people, nor did I seek out the designers of the specific materials that I showed to the young people. This is because the materials I chose are not

singularly important as aesthetic artefacts.

I interviewed each designer using a semi-structured interview method. The semi-structured interview method asks participants to discuss their lived experience within their worlds, from their own perspectives (Kvale). "It comes close to an everyday conversation, but as a professional interview it has a purpose and it involves a specific approach and technique; it is semi-structured – it is neither an open everyday conversation nor a closed questionnaire" (Kvale).

Although I followed a materials review with the semi-structured interview, I listened closely to the designers' talk about the materials for any opportunities to open up our conversation to my semi-structured interview questions. Galletta noted that each researcher must attend to the research participant's interview "*as it is unfolding*" (76), listening for junctures where a prompt will be useful, or when the researcher should not interrupt the participant's narrative. A researcher must bring to the interview thoughtful questions, some capacity for spontaneity and decision-making to be able to respond reflexively to a participant's words, and depth of knowledge of the subject being discussed (Galletta 77). Galletta also recommends the importance of attentive presence during the interview, cautioning a researcher against in-session thematic categorization:

> This approach has the potential to dull your sensitivity to what is said and not-said during the interview. It also may slant your questioning in pursuit of confirming the evidence. In general, then, it is best to focus the interview on the task at hand: eliciting from the participant the meaning he or she gives to the focus of study and capturing that meaning as accurately as possible. (Galletta 78)

Ethical Considerations and Limitations

For this study, I adhered to the ethical guidelines contained in the *Tri-Council Policy Statement: Ethical Conduct for Research with Humans*. I obtained approval for the study through the University of Alberta Ethics Review Board (ERB). I did receive approval from the Cooperative Activities Program (CAPS) with Edmonton Public Schools, and made several short presentations and requests for participation in two Edmonton area school sites. However, I did not have any participants from these sites.

The University of Alberta ERB reviews the project and any potential risks or harms that could arise for participants as a result of the conducted research. The ERB reviews all research protocols, informed consent / assent documents, and interview questions for the project before assigning approval. (Please see Appendix B for copies of these documents with respect to my research.)

All participants in this study have had their names changed, and identifying details suppressed so as to ensure anonymity and confidentiality.

This project was limited to 12 young people, and three individual designers. The professional discourse which I analyze was limited to what published reviews and discussions I was able to locate in the library literature. The study took place during single-session discussions and interviews with the participants. The participants chose what information and objects they would like to provide, and I selected excerpts from that data in the analyses.

CHAPTER FOUR: MY READINGS

First Approach

This chapter will present the observations of information design by mediators, in the form of professional librarians. I will detail my affective responses and interpretations of the design elements I observed while looking at my five selected information materials. I follow this with a brief summary of published reviews of these materials found within the professional librarian literature.

David Suzuki's Green Guide*: First Approach*

This print book is a trade paperback, with slightly rough texture on its cover, and lower-quality paper, which suggest utilitarianism to me. It also suggests a mass print run, in attempts to get the book out to many readers at a reasonable price. I notice the cover (Figure 1), which is green, and has Suzuki's name prominently on the front. I think Suzuki is definitely the selling point with this book, as such a prominent media scientist, certainly within Canada if not internationally. I notice the bold, colour fonts used to emphasize the verbs: "to find," "create" "make," reduce" and "be". It's meant to highlight what I can do as a citizen / consumer / individual. I feel like it's setting me up to read for action.
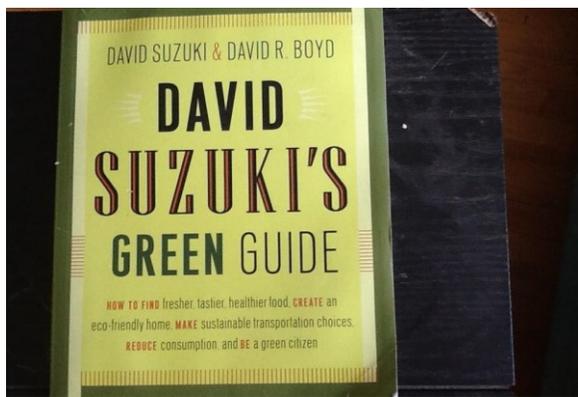
Figure 1. Green Guide cover, from David Suzuki and David R. Boyd, David Suzuki's Green Guide, *(Vancouver: Greystone / D&M, 2008).*

I open the book and read its dedication: "This book is dedicated to every person worried about the Earth who has ever wondered 'What can I do?'" This reassures me, and speaks directly to me; as someone who has often felt overwhelmed by the magnitude of environmental damage in so many areas of the planet, I often wonder what I can do, and whether or not it really makes any difference. I feel included in this dedication.

In the table of contents, the chapter titles are brief, friendly, and informal. "Help Wanted," "Home Smart Home," "Food For Thought," "Less Stuff," etc. As I flip through, I see that the chapters have few illustrations (a very few black and white charts in the first chapter). So what I notice on the textual pages tends to be the headings that divide up the content. I see repetitions of headlines, "Inspiration," and "What You Can Do," throughout, along with a "Recap" at the end of every chapter. This seems to be a book that is meant for me to put to use, as suggested by the front cover and the headings. The fact that there is little to "see" in this item means my attention goes further into the text itself (Figure 2). There is less to look at and so I tend to read more for this exercise.
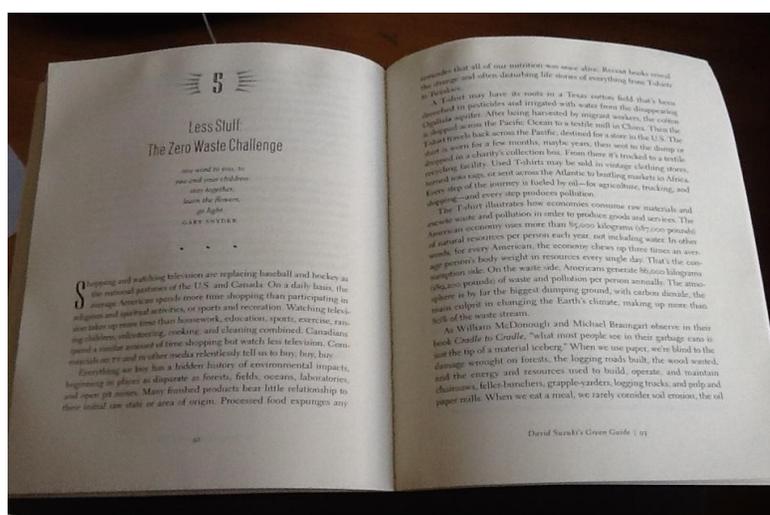
Figure 2. Sample page spread, from David Suzuki and David R. Boyd, David Suzuki's Green Guide, *(Vancouver: Greystone / D&M, 2008) 92-93. Print.*

The body of the text includes many bulleted lists that seem useful for a scanning way of reading. The tone of the writing throughout is friendly, slightly more formal than the headings and cover. Individual chapters include statistics and "facts." As a side note; this book was published in 2008, but as of this writing, Suzuki was named "Canada's Most-Trusted Influencer," May 2015, by *Reader's Digest* magazine, a headline I noticed while glancing at magazines when I was waiting for an appointment.

As I'm skimming, I also vaguely remember reading somewhere online, perhaps in an interview, that Suzuki had said that there was very little that individuals could do that would actually make an environmental difference. I'm not sure if it was before this book (published 2008) or after; I hope it was before in order to be able to feel like the information in this book is current enough that I can follow its recommendations without again succumbing to that feeling of overwhelm.

In summary, I would say that the *Green Guide* is a how-to book, using the brand recognition of David Suzuki in order to provide an accessible text that helps to convince consumers how to live in a more environmentally-friendly way. It provides an opening to others through the idea that its recommendations can be integrated into a contemporary life in a city, as well as in a rural area. It's information that is meant to influence a person's life.

Self Sufficiency for the 21st Century*: First Approach*

I first notice the size of this book: it's 20 x 29 centimeters, a large, coffee-table-size book with full-colour cover and large type (Figure 3). It's also thick: just over three hundred pages of glossy, sturdy paper, also full-colour throughout. This is an expensive book, which immediately seems a little at odds with the idea of self sufficiency. Opening the book, even before I get to the title page, I see a full-colour photograph, image full bleed on the page, of various colours and

shapes of squashes beside a garden. Even the credits page, beside the ISBN and publication information, includes three close shots of a garden being watered, a cat lounging in a vegetable bin, and a bowl full of sliced peaches. The book is written by Dick and James Strawbridge, a father-son team, noted in the biographies on the book jacket. It's published by Dorling-Kindersley (DK); I remember DK books mostly from my own childhood. I remember they published glossy, colourful non-fiction works on ancient cultures, different countries, and natural phenomema. Those were all hardcover, and although they were thin, the layout of each book felt packed with information; I remember double-page spreads that would feature a large central image (such as an illustration of a volcano), for example, with smaller pictures and call-outs of text around it. There was a density to the DK books that I liked.
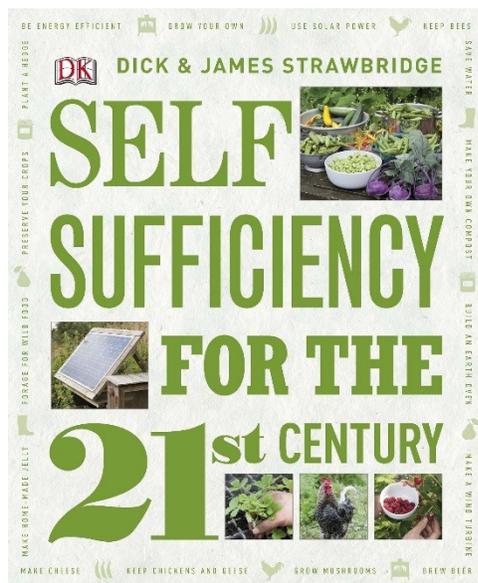
Figure 3. Self Sufficiency cover, from Dick Strawbridge and James Strawbridge, Self Sufficiency for the 21st Century *(New York: DK, 2010). Print.*

This book evokes the same feeling for me, although the pages are more "structured" in their layout than the ones I remember from childhood: rather than a collage-type of grouping,

photographs are in squares and rectangles, and the text is more of a narrative than just a series of discrete factual paragraphs. Each page spread is self-contained, focusing on a single aspect of self sufficiency such as "harnessing wind energy," "using a hydraulic ram pump," and "using biofuels." While some of these facets are quite technical as just noted, others are simpler and more familiar to me: "Reusing and recycling," "Vegetables to grow," and "Baking bread."

This subject matter is clearly for adults, which is somewhat surprising to me, as I had thought DK were a children's market only. The technical nature of the subjects is somehow softened by the large, beautiful photographs of farmyard animals and an idyllic acreage; there's so much to look at. This book has the opposite effect on me that the *Green Guide* did, as I am looking much more than I am reading text. Some of the illustrations are detailed cross-sections, such as that of the shed in the figure for "Setting up a well-equipped shed" or maps like "The small farm" (Figure 4). I want to look more closely at the details within. These diagrams include legends, which make them easy to decipher. There are also diagrams for messier activities, such as butchering beef, which causes me to stop and think a bit: this is not a book that I'd take into my home slaughterhouse with me. It's too nice, and too beautifully-produced to be as utilitarian as the content itself seems to be. Would I have to memorize this process, or make a copy of it if I was really going to follow the Strawbridges' instructions?

Each chapter begins with a two-page spread (Figure 5), featuring large text that summarizes the contents which follow. This beginning spread also includes crisp, beautiful images of farming. The chapter summary employs some rhetoric, such as this from the "Natural Remedies" chapter: "Our bodies and homes have become battlefields and we are encouraged to use more and more chemical-based products to kill all the germs. We feel that there is a need for balance, and some of the ideas in this chapter may help you think a little differently about the job

of cleaning" (Strawbridge and Strawbridge 263). The authors are presenting the rhetoric of

simplicity, but in an upscale package. There is a cleanness to this book that skims over the mess

of what must be involved in the day-to-day of self sufficiency.
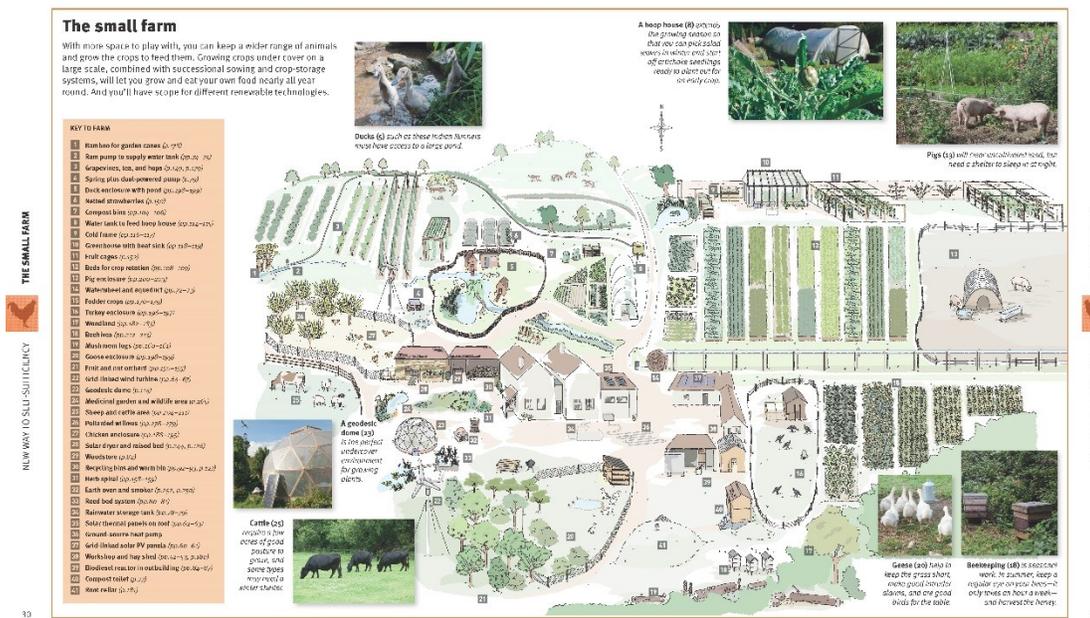
Figure 4. Sample page spread from Dick Strawbridge and James Strawbridge, Self Sufficiency for the 21st Century *(New York: DK, 2010). 30-1. Print.*
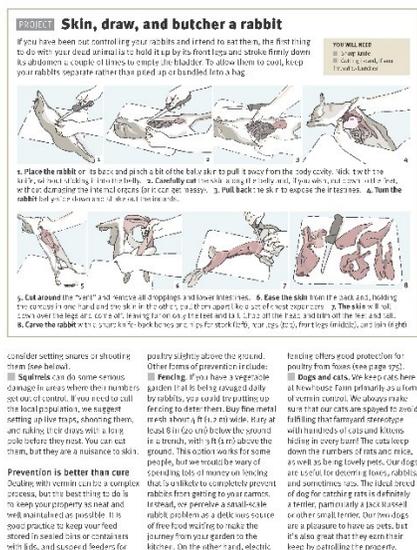

Figure 5. Sample page from Dick Strawbridge and James Strawbridge, Self Sufficiency for the 21st Century *(New York: DK, 2010). 217. Print.*

Self Sufficiency in the 21ˢᵗ Century is also a how-to book like the *Green Guide*, but it goes beyond the capacity of those living in a city, aimed at those who have moved or would move to a larger plot of land. This would be land on which the people would grow their own vegetables, raise slaughter their own animal proteins, and build facilities to generate their own energy. It's presenting an idyllic life that comes as a result of a person's hard work to be self-sufficient. This information is meant to be used by a reader to change her or his life radically. (Or allow them to further change it, considering that the ideal readers are likely on this road already.) It relies on established interest, aesthetically pleasing images and informative diagrams, and expert knowledge in order to provide its information. Page spreads are generally complete ideas, grouped thematically into chapters.

Prehistoric Climate Change and Why it Matters Today: First Approach

The first thing I notice on the *Prehistoric Climate Change* website (http://learning.si.edu/idealabs/climate_change/#intro/) is its music, pipes and congo drums, which I find mellow and pleasing as I watch the camera pan across a "realistic" illustration of dinosaur-era animals (Figure 6). The symbol for the site's loading is a veined leaf, and a red line gradually rises up the leaf's central vein; I like how my eye goes up, which makes the site feel less left-to-right in its scrolling, and more multidirectional. It suggests that the site "exists" beyond the small screen at which I am looking. The site colours are a bit jarring together (pink and maroon) but I don't really mind; the white font shows against the darker background. I like the font choice, which is quite "clean." I see some fun touches of certain words in the text changing from white to red for emphasis (e.g., the word "warmer.) This small animated emphasis brings to mind Rabinowitz's rule of notice. The text is informal, and it addressed me as a viewer

directly, using phrases such as: "You will now be able to tell how hot it got." The music, the

illustration, and the text set a kind of moody tone.
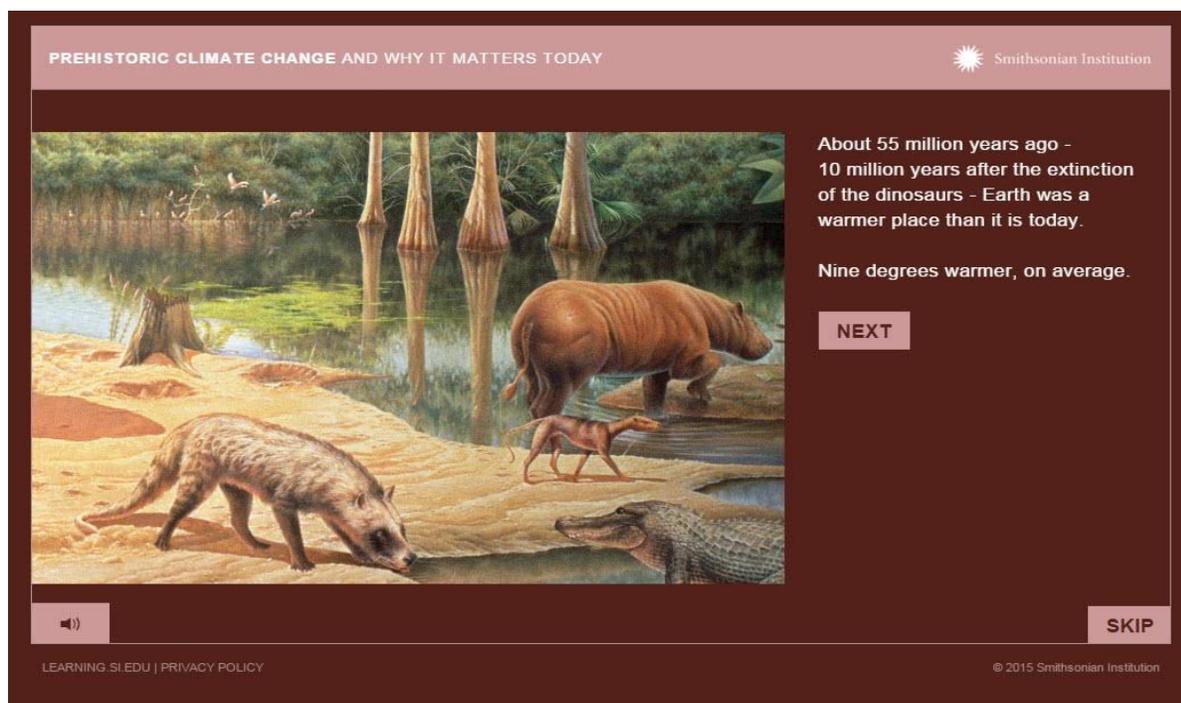
Figure 6. Screenshot from Smithsonian Centre for Learning and Digital Access, Prehistoric Climate Change and Why it Matters Today. *Smithsonian, Web. 4 Oct. 2015.*

As I watch, I realize that I can skip the animated introduction. I then get to a prompt for

my interaction, where I can choose to complete an activity from one of two leaf groupings

(Figure 7). I don't have a clear idea why I'd choose one or the other, so I just choose randomly.

When I start to sort the leaves, I notice that I can't skip any further. I have no choice but to exit

the site or to complete the leaf sorting. This is like a fun little game, so it doesn't bother me. I can

zoom in closely to any individual high resolution leaf fossil image to look at the leaf edges; I'm

sorting them into one of two categories based on the edges and how I see them. Leaves are either

smooth edged or edged with "teeth," and the site tells me that it's the proportion of leaves in the

categories that will help me see how the world "suddenly got much warmer."
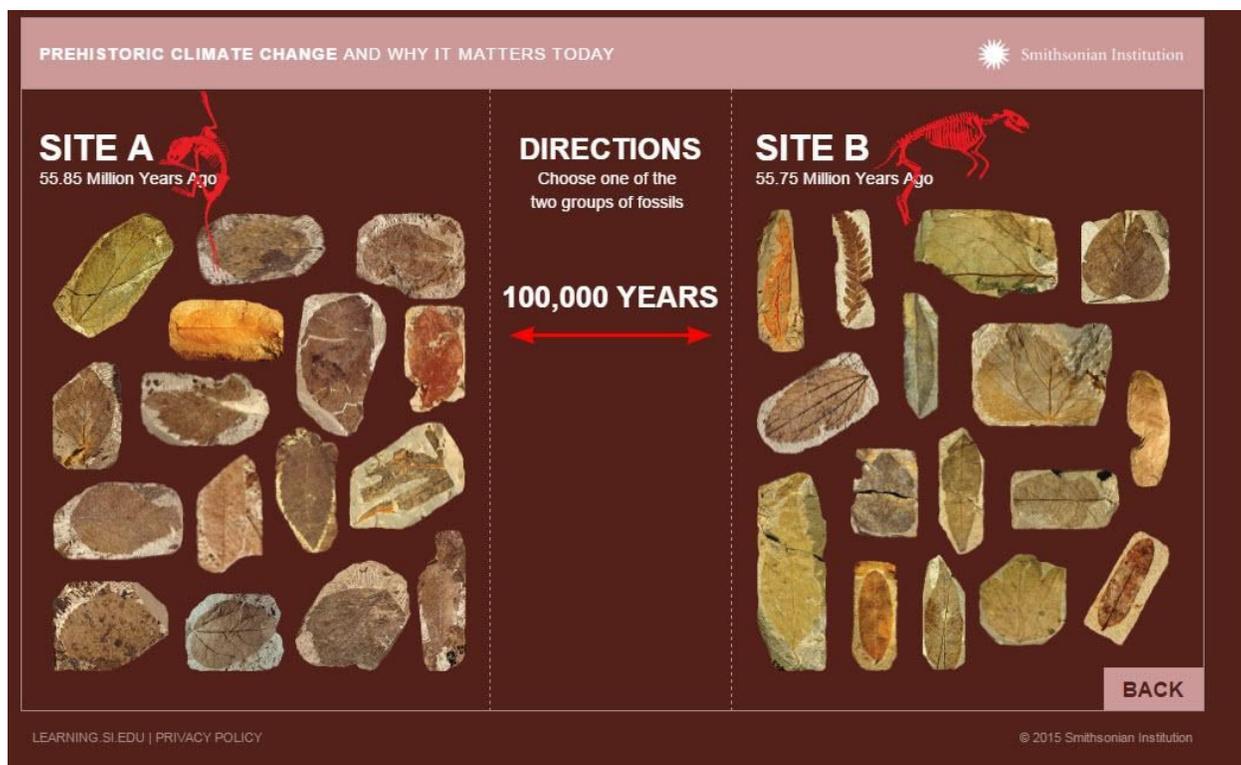
Figure 7. Screenshot from Smithsonian Centre for Learning and Digital Access. Prehistoric Climate
Change and Why it Matters Today. *Smithsonian, Web. 4 Oct. 2015.*

After completing the sorting, I check to see how many I got right; I need to redo the

sorting, because I have some errors. The site outlines my mistakes fossils in red, so it's easy for

me to just switch them from one grouping into another. The site prompts me to calculate and

enter the percentage of smooth leaves from the total. The site then launches a video of a

Smithsonian fossil scientist, who begins to explain the science behind the activity I've just

completed. The video of the scientist is almost jarring because he's so stiff in his manner; he

speaks slowly and a bit clumsily, and the content of his talk is to detail a mathematical equation

that I will use over the next section to calculate the temperature. As he talks, there is an image of

a graph, which refers to data from a contemporary forest, in which smooth-edged leaves were

sampled. He then says, "So each dot is positioned, by - on the horizontal axis by how many of its species had smooth axis - smooth edges, and on the vertical axis by the temperature that forest was growing under." I'm lost. He discusses the "cold" and "warm" ends of the graph of geographical places such as Alaska and northern South America. There is an animated line that creates a corner from one dot and the two axes while he is speaking about geography. I can't reconcile the scatterplot graph with the details that the scientist is naming. He then speaks the mathematical formula, which also appears on the screen. As he speaks, equation elements are highlighted visually, but the text of the equation is still made up of symbols, and uses words like "intercept value," which as an adult I don't understand.

The scientist ends the video with the words, "It's really that simple," at which point I laugh out loud. None of his explanation seemed simple to me, and it certainly was a dramatic departure from the simple text and illustration and sound at the beginning of the site, followed by a fun little sorting activity. The site designers have not echoed the scientist's spoken text in the graph in a way that might help me. For example, when he talks about low end of the graph being colder places like Alaska, and high end being the northern countries of South America, they could have highlighted those points on the graph. The scientist refers to "species" of leaves, which I associate with animals rather than plants. The mention of "species" prompts my visual memory of the beginning animation of the site, and my attention drifts away from the talk.

After the video, I'm then prompted to re-write the equation described verbally and visually in the video (Figure 8). The instructions say I need to drag-and-drop the equation elements into the correct order, to find the Average Annual Temperature; if I have problems, I can click on the BACK button to watch the video for help. This seems quite unhelpful, since the video wasn't compelling to watch, and I spaced out once the scientist started to explain the

graph. I also need to insert the percentage of smooth-edged leaves that I calculated pre-video, and I can't remember what this number was. I need to go back and redo this calculation, and feel more irritated. Again, the equation symbols are cryptic to me. I drop them in a random order until I'm told I got the equation correct (after three attempts), but I don't understand any more than I did before. I discover by accident that I can drop the same element twice into two different equation boxes, which surely the designers didn't intend.
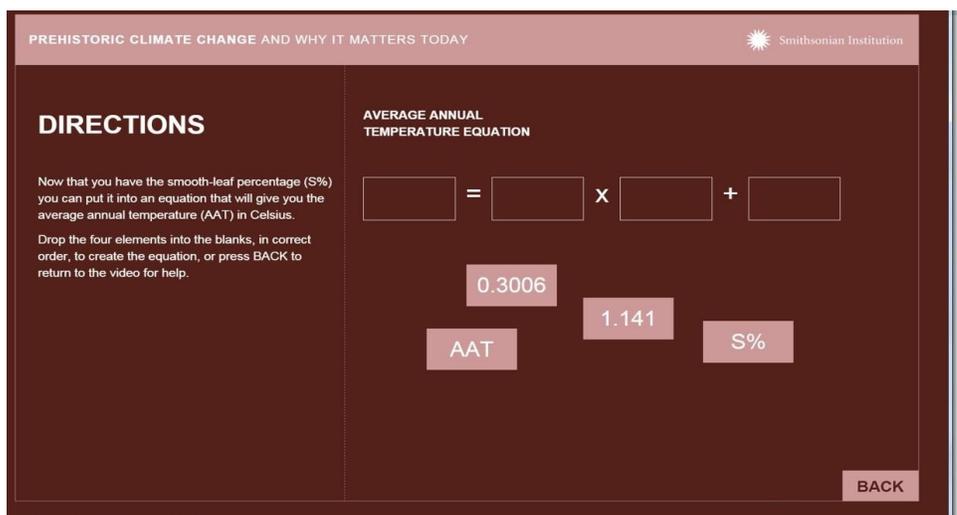
Figure 8. Screenshot from Smithsonian Centre for Learning and Digital Access. Prehistoric Climate Change and Why it Matters Today. *Smithsonian*, Web. 4 Oct. 2015.

Now I need to calculate the celsius temperature that the site showed me, into Fahrenheit. Why? I've lost track of the point of this, and I'm now following through only because I need to document what I see and notice in this site. My reward is being brought back to the group of leaves I didn't choose, and pushing through the process of sorting and calculating all over again. Although none of the screens are overloaded with text, I quickly forget the acronyms listed on them (such as PETM), and this layers on my disengagement.

I go through the site and its exercises numerous times, and it isn't until perhaps the fifteenth round that I notice in the introductory simulation, there is some additional information

when I hover over particular illustrations; for example, instructions on how to pronounce certain scientific words or further details on illustrations of dinosaur skeletons. I haven't noticed these for so long because they aren't flagged in any way. This reminds me of the so-called "easter eggs" found in some video games or DVDs; information or prizes stumbled upon by the most dedicated players and watchers. There also is no consistency with what is clickable – sometimes it is bold font but other instances of bold font are not clickable.

The site ends with a final video of the same scientist, with his same dispassionate delivery. He asks the question, "Sometimes I wonder, why should anybody care about leaf fossils?" which makes me laugh again, since he himself does not seem to care much. He tells a personal story about his youth, growing up in an area where fossils were numerous, which I assume is meant to give me a greater connection to him as a child, but his tone of voice makes all his spoken words seem neutral at best, boring at worst. The camera stays focused on his "talking head," with some shots of scientists in the field; but really, there is very little that enhances what the speaker is saying (e.g., landscape scans). He speaks about about such places as lush South Carolina and dry Mexico, but no visuals mirror this speech.

The site is called *Prehistoric Climate Change and Why it Matters Today*, but I'm not sure they answered the question of "why" until the very end. I wasn't satisfied; I wanted not just a factual answer, but an emotional answer to the question. I could understand the scientist's logic about how the past informs the present, but ultimately, this presentation was as dry as the desert where fossils are found. The final page of the site includes some further links for exploration; a worksheet-like section on the page called "Keep Thinking," and a list of links on citizen science, some of which are broken.

I assume *Prehistoric Climate Change* website is meant for a younger audience, as it comes with both a teacher's guide and a student site. It's presenting scientific, archeological, and mathematical information. It's intended to teach scientific information that is new to a young person. It's trying to pique a person's interest in science, and to understand how ancient environmental events and conditions can inform people dealing with similar environmental events today. It relies on interactivity, and expert knowledge to tell its story. It includes extraneous information, the purpose of which not all users did not understand. It presents information in a few "chunks:" the sudden change from cool planet to hot planet in the time of the dinosaurs, the way that fossil scientists can tell temperatures based on leaf fossils in ancient times, a listing of mathematical formulae followed by prompts to apply that formulae, and finally, a justification for why to study ancient fossils for what they can tell about climate change.

The Story of Solutions*: First Approach*

I start off launching *The Story of Solutions* (http://storyofstuff.org/movies/the-story-of-solutions/) by clicking on the video, which is embedded into a site with much more information and multiple menus surrounding it; the video is centre of the page, and takes up the most space on that page. I find the video's music is immediately irritating; it's got a kind of "funky" bassline that sounds too loud and too staccato. I notice that the narrator, Annie Leonard, seems open in her face and her address to a viewer, which I like (Figure 9). At the same time, some of her speech when she is making a sarcastic remark falls a bit short of the joke. When she says, "Do you have one of these?" showing an iPod Mini, then follows with, "Of course not! This thing is five years old. Now everyone has one of these. Can you imagine how much genius and focus it took to turn a music player into a handheld computer/phone/GPS/remote control for everything

in life in just five years?" I feel like she's pointing out the obvious to me; I have myself thought

of her points on my own, and I feel annoyed that I'm not learning anything new.

Figure 9. Screenshot, from The Story of Solutions. *dir. Fox, Louis. perf. Annie Leonard. Free Range, 2013. Web.*

The animation starts with her narrating the metaphor of the economy as a game. I like the

quickness of the animated figures' actions as they dump out the game box (which looks like what

I remember from the 1970s *Game of Life*), as they grab the instructions. It's a pleasing contrast

to Leonard's measured speaking tempo. The animation shifts from watching animated characters

play a game to the game pieces becoming characters "playing" the metaphor (Figure 10).
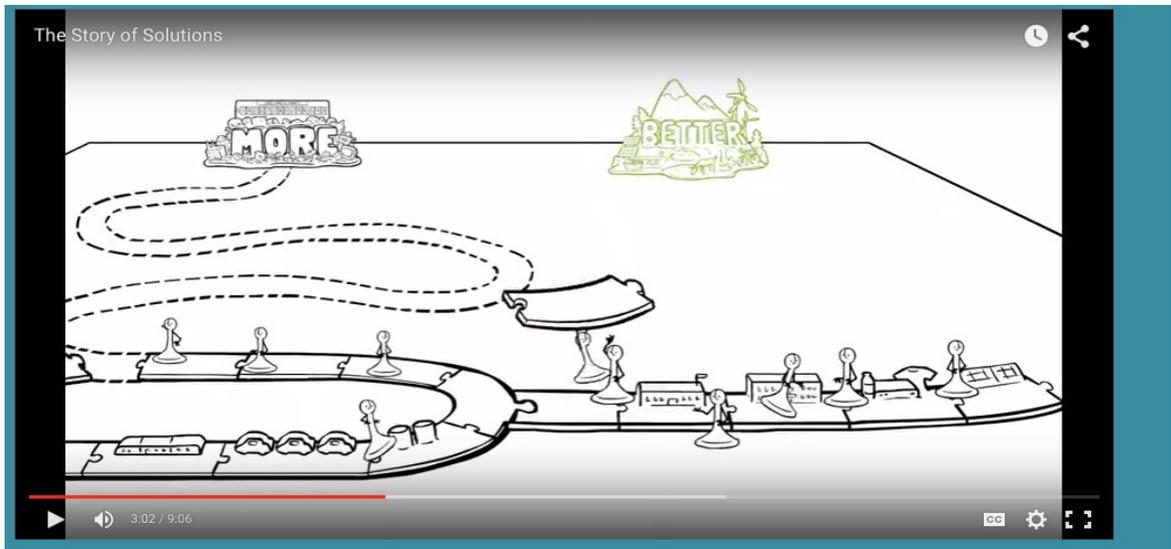
Figure 10. Screenshot, from The Story of Solutions. *dir. Fox, Louis. perf. Annie Leonard. Free Range, 2013. Web.*

When she describes the way that Gross Domestic Product (GDP) is measured, she says, "But there's a big difference between more kids in school and more kids in jail. More windmills or more coal fired power plants. More super-efficient public trains or more gas wasted in traffic jams. Duh. But in this game of more, they are counted the same."

I'm struck by two observations. One, that the first comparison of kids in schools to kids in jails is a heavy topic, given the "light" feel of the video thus far, with the visual and narrated jokes. The second observation I make is that her statements remind me of the work of economist Marilyn Waring, a writer I read about twenty years ago, whose book, *If Women Counted*, changed my understanding of the national and global economies dramatically. One of Waring's key points in the book, as I remember it, is that using GDP's measures of economic activity equally values any kind of economic activity, regardless of whether it has positive or negative effects on people and the environment. One example I think Waring used was that of a fatal car crash in which people die; this can be considered "positive" if measured by GDP due to the resulting economic activity in health care, the funeral industry, the car repair industry, and so on.

GDP does not take into account the negative impact that the deaths of people will have on their families and friends. A measure of activity is not a measure of well-being. Waring's work has stayed with me for twenty years, and Leonard's point rings true for me. I'm a bit less irritated by Leonard's tone of voice and other aspects of the video after this series of thoughts.

I soon feel irritated again when I hear Leonard speak this phrase: "For example, let's look at two solutions to one of the many problems we face today — the scourge of plastic packaging that *everyone* knows is a disaster for the planet, *especially* the oceans." I'm not sure why; I do believe that plastic packaging is terrible for the oceans, and I try to buy materials without plastic packaging myself. It might be her use of the phrase "everyone knows;" I think, everyone doesn't know. Suddenly I realize she's narrowed her audience down from "anyone" online, to those who already agree with her position. If we as viewers agree with her position, why do I need to be convinced by her narrative? I wonder what the purpose is for the video.

Some of what keeps me interested in this video are some of the small interruptions in its light tone and imprecise statements: these interruptions can include jokes in the animation, the name of a plastic industry lobby organization, or "weightier" comparisons like that of kids in schools versus kids in jails. The interruptions pique my attention, and make me suspect that the video might give me more than a smooth patter and cute animation. The animation itself is indeed cute; the black and white stick figures are playful, and can be silly, certainly sillier than Leonard's earnest and occasionally dramatic patter. The funniest joke to me comes when Leonard talks about "collaborative consumption--formerly known as sharing!" As she says, "Sharing may sound like the theme from a Barney song," the cartoon Barney appears in the accompanying animation. Barney watches disapprovingly as a male stick figure runs on a treadmill, trying to snatch "more" in the form of a set of car keys, from the hand of a capitalist

just out of his reach. Barney picks the figure up, and walks him towards a female figure, standing by a car. When the male figure doesn't right away approach the woman, Barney shoves him closer to the female figure, she offers him the keys for a car-share. Barney says, "Yay!" and grabs the two around the neck in a bear hug, while the male makes choking gestures (Figure 11).


Figure 11. Screenshot, from The Story of Solutions. *dir. Fox, Louis. perf. Annie Leonard. Free Range, 2013. Web.*

The humour here strikes me as sweet, but with a bit of an edge - just enough edge for me to appreciate. I'm surprised they can use the what is surely a trademarked character in both the narrator's script and in the animation, to the extent that they reproduce Barney's voice when he grabs the figures in a hug for sharing. I think the best jokes here are those used in the animation, diverging slightly from Leonard's narration, or subtly emphasizing it. Because I find Leonard's voice overly enthusiastic at times, and I think her assumption that "we all know" we are ruining the environment is a bit smug in its confidence, I like a visual joke to lighten up, as a bit of silliness.

Something I do find good about Leonard's speech is that she is never catastrophizing. Much environmental reporting and opinion writing I have read induces a certain kind of panic in me, due to their tone. Often, calls to environmental action that I have read try to motivate using fear, saying that the situation is so urgent, we cannot wait to act. This has an opposite effect on me, where I feel overwhelmed by the scope of the problem and the great social and economic machinery that has given rise to environmental destruction. This is where a hint of the writers' thought process comes through; it seems they anticipate this kind of overwhelmed response to information about environmental damage, when Leonard says, "But can banning a few million bags transform the goal of the game? By itself, no, but in combination with millions of others working on game changing solutions they care about - Yes! Together, these solutions are beginning to turn the tide."

Leonard uses her local public library as an example of a place where consumer goods such as hardware tools are available for loan; the mention of a library speaks directly to my profession and the ethics of access. By the end, where Leonard says, "Come on, let's do it!" I feel optimistic and like what she is suggesting is quite possible as a way to make change, even if the scope of the problem feels huge, still.

The Story of Solutions is a work of rhetoric. It's meant to convince watchers to action. It tells a narrative using the metaphor of the capitalist economy as "game," and the narrative is populated with facts. It relies on humour, metaphor, rhetoric, and imagery to tell its story. It's the closest example to narrative from my set.

Atlas by Collins*: First Approach*

The production of the *Atlas* app is slick and beautiful, the most sophisticated of my set of materials. When I press on the app icon, a slowly turning globe appears in against a starry black

background. I launch "The Environment" globe (see

http://atlasbycollins.com/2013/01/17/environment/ for sample imagery). This globe is subtitled,

"The Natural World and Man's Impact Upon It." The tagline reads, "Discover the Earth's

different landscapes, how the environment is changing, and what threats the world faces." As an

iPad app, the *Atlas* uses the capabilities of the digital environment, such as the elegant visual

shift of visual elements when I move from one screen layer to the next.

I have a choice of five different menus for the planet, based on different data sets: Land

Cover, Environmental Threats and Hotspots, Carbon Dioxide Emissions and Global Warming,

Forest Change and Deforestation Hotspots, and Fresh Water Resources.

Each menu has differently-coloured submenus. For Environmental Threats and Hotspots (Figure

13), there are seven options of data display. Looking at this submenu, I'm not sure exactly how

and why these categories have been determined. Desertification and deforestation seem

straightforward; but why is 1940 a significant date for deforestation rates? What is the difference

between severe coastal pollution and persistent coastal pollution? Do these two categories

include oil slicks, or not?

When I press a menu, the coloration of the globe changes to show what category different

areas of the planet are experiencing what type of environmental threats. These are discrete

categories in their display, and the colours never overlap; not all land mass areas are coloured, as

not all are under these specific threats. I can zoom in very close to a city or region to look at

some of the details; at a certain zoom level, however, the colour-coding disappears, and I am left

just looking at a satellite map. The app uses Apple Maps for some of its data, and when I zoom

in, I eventually receive an error message that reads, Apple Maps does not have this data. I'm not

frustrated here, because I'm not zooming in for any particular reason; unlike the *Prehistoric*

Climate Change site in which I had no choice but to "go forward" through the sequence of images, videos, and interaction, this atlas is wide open to me, so I can just stop on any area of the world I am interested in.

The menu legend includes a small information symbol, which gives more textual content when pressed (Figure 14). In the case of "Environmental Threats and Hotspots," this additional information doesn't quite match up to the menu categories. For example, there are images of acid rain in Poland, a chart with air pollution levels, and a list of the world's most-polluted cities. There is also a graph showing the increase of human ecological footprint. How does this connect to the menu categories? One small feature that works nicely in this app is that in the list of polluted cities is clickable, and will take you to the city on the globe (although it seems to leave out the menu colour-coding). The text here is written in general language, and although it does frame the general idea of environmental threat, it doesn't give me tools with which to understand the menu categories. An example: "Some chemicals and biological materials cause harm or discomfort to humans and other living organisms. When they are introduced to the atmosphere, the air becomes polluted." This is followed by a detailing of common particulates and a chart showing air pollution by continent. I think this is credible information, mostly because the app is published by Harper Collins; the publisher is a cue that prompts a credibility heuristic. It's an impressive creation of software with much data behind it, but I find it hard to make a greater sense out of it. I don't think of any previous information that I know that is confirmed or challenged by this app; I feel a bit adrift, unsure where to go next.

The *Atlas by Collins* is an interactive app that relies on sophisticated multimedia, brand recognition, individual gesture/swiping, and statistics to give its information. It provides no narrative, and a user must just start interacting; the user may go in multiple directions with the

app: starting points for directions could be investigating geographic units (cities, countries, land masses) or types of pollution / environmental damage statistics. A user can also look at the additional information under the "i" button that changes with every location. But a user could go "off map" and also just look at places randomly.

My Readings: Using the Before Reading Framework

Rabinowitz is concerned with how a reader can read a text in the role of an authorial reader, to "attempt to read as the author intended […] as the joining of a particular social/interpretive community; that is, the acceptance of the author's invitation is to read in a particular socially constituted way that is shared by the author and his or her expected readers" (22). While Rabinowitz spoke of the author and reader, I am going to define "authorial" in this instance as "intended-by-designer." My concerns in this research are focused on how design guides individuals' readings, and having previously discussed the role of the "ideal designer" and the "real designer," I continue my exploration of the role of designer in this postulation of design intentions. My previous readings of my five information examples demonstrates some gaps between an authorial / design-intended reader and a "real reader," as well as some overlap between these two reading approaches in my individual case. These readings are shorter than my first readings and interpretations, and I will not repeat design elements that I wrote about previously with these works. My first readings can be categorized under rules of notice, with some allusions to rules of signification. In the following brief readings, I will talk about rules of configuration and coherence, the patterns of design choices and the overall meaning I give to the work.

David Suzuki's Green Guide*: Design Intentions*

The design in the *Green Guide* is meant to support the text's purpose, which is that of calling a reader to action in terms of their life and consumer choices. The designer has used colour contrast and capitalization of certain words to guide my eyes: "HOW TO FIND fresher, tastier, healthier food, CREATE an eco-friendly home, MAKE sustainable transportation choices, REDUCE consumption, and BE a green citizen" (n.p.). As I noted in my own first reading, the text includes bulleted lists and subheadings in each chapter, which can help a reader to skim for useful information. Further, several headings are standardized, and so certain headings are repeated: "Inspiration," "What You Can Do," and "Recap." The writer(s)/designer(s) have used textual patterning in order to instruct readers on how to read this book. The overall approach to the book's design is that of readability and of subtlety; at no point, even on the cover with its use of colour, do design elements such as layout or font command attention. The design for this trade paperback book is seemingly meant to support the casual, friendly style of writing.

Self Sufficiency for the 21st Century*: Design Intentions*

This book contrasts dramatically with the *Green Guide*. Its dimensions are coffee-table sized, and its cover text is all in capitalized letters. This hardcover includes a dust jacket, alluding to a kind of valuing of the book, as a work that should be treated with some care or respect. The capitalization of the cover text also suggests the importance of the contents. As I flip through the pages, beside bold headings and large-font text, I see high-quality appealing photographs of farmyard animals, fruits, and vegetables; these suggest the ultimate bounty that comes from the self sufficient lifestyle. On several page spreads, I see detailed diagrams and maps, providing more information about how to make the best use of farmable land in a

suburban backyard, or how to set up a "well-equipped shed," for example. This high-quality

book is extremely "clean" in its layout and illustration, creating the self sufficiency ideal from

the mess of real-life farming and animal butchery. It presents the end result of environmental

choices, as compared to the Suzuki guide, which focuses more on the decision to follow

particular choices for environmental reasons.

Prehistoric Climate Change and Why it Matters Today*: Design Intentions*

     I see fewer "clusters" of design elements in this website, as it shifts from the illustrated

and animated introduction, to photographs of paleontologists in the field, to the interactive

elements of leaf-sorting and temperature calculation. It ends with a "talking head" of a climate

scientist This site doesn't have the unified look and feel found in either of the previous print

books; it seems to shift styles and levels of interactivity as a way of keeping my attention with a

changing screen, leading me through a lesson. I can't predict what might come next, in terms of

content or interactive design. I believe the authorial / design reader of this site is a reader who is

ready to accept the directions given by the site at any given moment: who will engage when

prompted, and complete every activity. This reader is willing to accept what the site offers to her

or him, and has a flexible attitude towards the content.

The Story of Solutions*: Design Intentions*

     The video *The Story of Solutions* presents the metaphor of "the game" to explain the

organization's frustration with GDP as a measure of economic "progress." The game metaphor is

represented through the narrator's rhetoric, and through the accompanying animation. The

animation features game pieces representing "the people," faced with the choice between the

goal of "better" (schools, products, socially responsible systems) over that of "more" (consumer

goods). The video's focus is on the "story" of potential, grass-roots alternatives to the current economic system; it works to convince a viewer of the necessity of action, similarly to the *Green Guide*. It is appealing to a viewer's emotion: outrage at the way in which our current economic system is structured, and excitement about shifting goals to "better" systems, rather than "more" things.

The use of animation primarily to illustrate the narration reinforces the story for the duration of the video; the argument seems to tighten and clarify, giving the message a singularity that I did not observe in the *Prehistoric Climate Change* site. *Solutions* also is the only example from my collection of materials that does not require a viewer to advance the text; a viewer can stop or pause the video, but once started, the video does not require a viewer to click for more information (although footnotes are available that provide citations for some of the narrator's statements) or interact further.

Atlas by Collins*: Design Intentions*

This app presents the same type and display of information as does a print atlas, with the main difference being a user's ability to navigate between different information summaries within the screen by touch, rather than flipping through a book's pages, or navigating with a mouse online. The atlas is one of the oldest types of visual representation in book form, making for an interesting tension with the currency of the *Atlas* app. The app's connection to the Internet offers an advantage of this particular type of information; as updates of information and/or filters are pushed out, the *Atlas* app can easily update its contents for currency and accuracy (if, indeed, the publishers are concerned with updating content).

A map is a way of presenting information that can be seen and interpreted even before its text is read; the *Atlas* app takes advantage both of the conventions of this type of material, as

well as of the newer affordances offered through digital publication. The "full view" of the entire globe includes very little text, even on the legend. Explanatory text lies below the "surface" of the map, available upon a user touching or pinching a geographic area for more detail, but not visible in the default view. This emphasizes looking above reading, or at least reading only when a user is interested enough in an area or in the meaning of a specific colour to investigate further.

Professional Discourse: Reviews of Information Materials

Overall, I did not find extensive reviews in the professional librarian literature of the five information materials that I had selected. The absence of reviews of these particular five materials isn't surprising; publishers and producers release thousands of materials for young people annually, and there are only so many publications for reviews. Further, it takes time to get materials to reviewers, and for the reviewers to evaluate the works they have.

Publisher's Weekly provides a brief note on the *David Suzuki Green Guide*, suggesting the book is for all ages, and that it offers "environmental options related to home, travel, food and consumerism." *Self sufficiency for the 21st Century* was reviewed in Library Journal, and the reviewer noted the authors wrote with an "enthusiastic, engaging style [that] makes for easy reading [...]" (O'Brien). O'Brien states that the book is targeted towards beginners, and by this, she means adults. Other than noting that the instructions are both comprehensive and efficient in terms of page spread, the reviewer doesn't note anything about the book's design or production. I did not find any librarian reviews of *The Story of Solutions* or of the Smithsonian *Prehistoric Climate Change* websites. In a brief review for *School Library Journal*, Potter primarily outlined the content and functionality of the *Atlas by Collins* app in five paragraphs. She advised the app to be appropriate for grade 6 and up. The review paid some attention to design choices (colour-coding of keys and symbols, and the lack of narration or sound). Potter's summary notes, "While

the breadth of information in *Atlas by Collins* is impressive, the download time, tendency to shut down, and substantial amount of storage space required (1.3 GB) may prove problematic for some users."

I was not surprised that there were no reviews of the two website works, for all the reasons I noted above regarding reviews of more traditionally-disseminated materials for young people. Additionally, web materials that are available for free may be perceived as less stable, and prone to disappearing, therefore making them seem less important for professional review. If the purpose of a review is to help other librarians build their collections, why include free materials at all? Although I understand the potential reasons behind not including free digital materials in professional literature, this lack of inclusion is a gap in terms of the kinds of information materials that young people (and adults) are searching for and using every day. As I note later in my data analysis, young interviewee Tara (age 11) recognized the *Prehistoric Climate Change* website because she had used another site from the Smithsonian for in her school project on lizards. Freely-available information sources may not be what librarians use to build their collections, but they are part of the information world accessed by our users.

CHAPTER FIVE: RESEARCH PARTICIPANTS' READINGS

This chapter will address my research questions regarding the interpretations of my interviewees based on specific aesthetic elements they discussed in the materials they brought to the sessions, as well as those aesthetics elements interviewees observed in my preselected set of research materials. As I noted in Chapter One, although my proposal presented five distinct research questions, the data I collected prompted me to reconsider how I would address these questions in my analysis; I believe what is most appropriate is a more holistic exploration into interviewees' interpretations of the design of informational texts. Chapter Four explicitly reviewed how the discourse of librarianship considers aesthetics and heuristics of information design in my collection of five materials. Chapter Five turns to the interview participants, demonstrating how these young people and designers talked about aesthetics, heuristics and cues, affect, and trust. I frame the interviewees' responses to the materials through Rabinowitz's rules of reading, providing a way of understanding how these interviewees were paying attention in our sessions.

Pre-Notice and Pre-Reading/Viewing: Readers' Pre-Session Interests

I asked all research participants to begin our session prepared to show me "something" they are interested in at the time of interview. This could be, in the cases of young people, any type of media content: a book, game, app, website, recording, etc. For the designers, I asked them to show me something they had designed which they felt was particularly successful. The design example could be for any audience, and I also gave them the option of showing me something developed by another designer, if that was their preference. My request was meant to bring the research participant more fully into our session, so that rather than only talking about objects that I had chosen, that each person was able to demonstrate and discuss something that

brought them some kind of pleasure in reading, viewing, listening, or watching. It also started

our conversation on a note of: tell me about something you like. This allowed me to begin to

understand a bit more about the types of aesthetic appeals to each person. I asked what each

person liked about the object they had chosen to show me, and whether there was anything about

it they did not like. The next pages provide brief descriptions of each young person and designer

who participated in my research. I also describe the item that each participant chose as an

example of something they currently enjoyed (in the cases of the young people), or that they had

designed and felt was effective (in the cases of the designers.

Young People

     Tara (age 11) is a bright, talkative person, whom I interviewed in her family living room.

She was homeschooled until the age of nine, after which she attended a school in which the

students complete projects that are based on their own interests, rather than on an instructor-led

curriculum. Tara's talk was a bubbly kind of chatter, and she was clearly enthused about meeting

with me and talking about both her own interests and about the items that I had brought. At the

same time, Tara emphasized that she enjoyed activities alone as much as she enjoyed them with

her friends, saying that she liked to immerse herself into the world of video games, for example.

While she was open to looking at my materials and talking with me, she seemed to have no

hesitation in giving me her true opinion as to whether my materials appealed to her or not, and

why.

     The item she chose to show me was her *Sims* game. Tara was immersed in many aspects

of the game, testing its limits (such as whether a character would become a ghost after it was

killed), and trying out all the different choices that game players have: customizing the

demographics of characters, building their homes, and making them participate in different

activities. She enjoyed demonstrating different character options to me. She said that she could sort of understand Simlish, the imaginary language created for the game characters. Tara had played different releases of the game, and she could easily describe the differences between earlier releases and the one she was currently playing.

Ivan (age 11), was a distinctly different participant from the other young people. When his mother brought me back his signed consent form, in the place of his signature, Ivan had written, YOLO, for "you only live once." She expressed some surprise that he wanted to sit with me, which made greater sense to me once I'd interviewed him. Ivan, 11 years old at the time we met, is energetic and outgoing. He can focus his attention intensely on those things that interest him, and shifts his focus away with things that are uninteresting. I interviewed him while his mother worked in her home office down the hallway. The interview took place in his home living room, which even though small, was outfitted with several cozy chairs as well as a one-person trampoline. Ivan did make use of the trampoline about twenty minutes into the interview, jumping from the loveseat on which we sat to jump while he answered some of my questions. He just as quickly hopped off the trampoline and returned to the couch. I felt that he very clearly led the interview, rather than I did; I had some anxiety about boring him, and I wanted to reduce the chances of boring him. He was hands-on in his attention: playing a game, bringing out examples of his series books, fooling around with the laptop cursor. He was honest about his boredom with the examples I brought, although never rude; rather, he was more interested in play than in sitting and listening, and talking when asked.

Before the session, I had told Ivan's mother that he could bring an example of print or digital media in which he was interested, anything in which he was very interested right now,

such as a game, an app, or a website. She later told me that he rolled all those categories together, and wanted to show me the video game, *Plants Vs. Zombies 2*. The game is available for play on iPad and other tablets, and challenges the gamer to defeat zombies from various historical time periods, including ancient Egypt, a 1960s surfer beach. and a nightclub in the 1980s. The gamer plants as weapons, shooting peas and hitting zombies with watermelons, as two examples. *Plants Vs Zombies 2* is periodically updated with new historical "worlds," new zombies, and new plants. Gamers can earn or purchase updated characters, and customize their "costumes." At the time of our session, the game had six worlds, each with up with 32 playable levels, and a "never ending" level that goes as high as the gamer can survive. Ivan played several levels of the game as we sat together, and he talked through his most-hated zombies, and the most powerful fighting plants. I had assumed that he would get tired of the game, or at least, put it down out of a sense of obligation. I was wrong; after twenty minutes, Ivan shifted his attention to my materials without protest, but clearly without enthusiasm.

Elliot (age 11) met me at a branch of the public library near his home. He was eleven years old at the time of our session. He is an athletic boy, who plays basketball and said that the only part of school he liked was physical education; when I asked whether he was interested in the subject of the environment, he said, "Not really." Elliot showed a quiet but sardonic sense of humour during our seventy-minute interview. He signalled his lack of interest in some of my questions by answering with jokes, which I began to anticipate as a sign that he was ready to move on. In particular, he mocked his music teacher, whom Elliot said was always talking about how he was helping the environment, choosing not to drive to his teaching job, for example. When I asked Elliot whom he thought several of my materials were written and published for, he

said, "My music teacher," as a refrain. He wasn't very talkative during the time with the information materials I had brought, but he did keep up a running commentary on the two items of his choice: his hand-held *Pokemon X* game and the Lemony Snicket book, *A Series of Unfortunate Events*.

We began with Pokemon X; I asked, "How does it play? What do you need to do in it?" Elliot started a game to demonstrate. As he played, he talked about the different versions of the Pokemon game, the number of badges a player could obtain, and the names of various enemies to battle. He talked through the trajectory of a successful player, from the beginning of the game to finally "beat the game." He had owned a different version, Pokemon Y, and preferred the X version because of the "mega evolutions," which made the characters "stronger and it makes [them] look cooler" in their appearance. He liked to play other Pokemon gamers online, and was a little frustrated that he couldn't connect his hand-held while we were at the public library. He described every one of the four Pokemon he had at the time of our interview, and named the special game stones he had acquired, which made them evolve in particular ways. Elliot also knew the history of the game characters, back to 1996, well before his own birth. As well as the game, Elliot enjoyed the television show, preferring the older 1990s television series for its humour; in the new series, "they're never funny anymore. They're all serious." I commented that I would have assumed the newer series was of a higher quality, and he answered that the only thing better was the drawing. Elliot's only disappointment with Pokemon X was that he had thought the game would introduce a greater number of characters, As he played, he was more interested in showing me different game levels, from a battle to a "mega evolution." He seemed to effortlessly conduct a think-aloud while playing, answering my questions, and never moving

his eyes from the small screen until his character was defeated, and we moved on to discuss *A Series of Unfortunate Events*.

Elliot had read ten of the thirteen books in the series. He particularly enjoyed the "scary" factor of the villain, Count Olaf, as well as the villain's many disguises. Elliot's description of the book was not so much a recounting of the plot in the books, but rather, features that he liked about the characters, the some of the patterns he had observed, such as the clues at the end of each book that hint at what will happen in the next. After a brief discussion of the book, I asked a follow-up question about Pokemon X, and he spoke at length about the game's character's for another five minutes.

Sarah (age 11) is the youngest child of three. She is an active girl, and has been described by her mother as having strong opinions on many subjects. She plays soccer in a competitive league this year-- her first year out of recreational soccer; her position is striker. She is also playing hockey this year, and Sarah told me that she played defense, on a team mostly comprised of boys, with just one other girl on her team. We conducted our session in her room, which was brightly coloured with green walls, small pink throw rugs on the carpet, and a hot-pink duvet cover on her bed. We sat on the floor to talk, which seemed the most convenient place to spread out the materials I had brought.

Sarah had chosen to show me the app Instagram. She toured me through the basics of the app's functions: how to post a picture, how to "like" a post, and how to find and follow other app users. She began to show me the app's functionality, including how pictures are posted, and how a user can "like" the images from another user. Her favourite categories were #puppiesinstagram, and she liked to follow the account of pop singer Selena Gomez. Her search for Selena Gomez

images was, in fact, where her greater frustrations with the platform lay. People often created fake Gomez accounts, trying to fool viewers into believing they were "the real" Selena. She thought they were doing this just to get attention and likes. Sarah didn't like the confusion she felt and the time wasted in determining whether the account was real or fake. I asked her how she knew that it was a fake account, and her answer was very interesting. "They don't have like, proper pictures. Like, I see pictures that they post from like, Google Images or something." Sarah clearly was able to determine the difference between the kind of picture she believed Selena Gomez would post, and the images that were more generally available on other, "non official" Gomez websites or entertainment sites.

Owen (age 11) met with me and his sister Alicia (age 13) in the dining room of their family home. We sat around the dining room table on an afternoon in early summer, while their mother worked on a craft project at one end of the table. Owen was quiet but not shy, and spoke easily in response to my questions. He seemed to be quite good friends with his sister Alicia, as he sometimes finished her sentences, and often gave her a knowing look when she was speaking about her interests.

He brought two items: the book *The False Prince*, and an app on his phone, *The Wolf Among Us*. Owen described the plot of *The False Prince*, a fantasy mystery story in which a teenager named Sage, who is selected by a man from the court to impersonate the land's missing prince, in order to stop a civil war in the kingdom. At the end of the novel, Sage is found to be the real missing prince himself. As Owen spoke, his talk shifted between the major plot points, and the backstory of how Sage went missing and ended up in an orphanage, without knowing his own true identity. As we chatted about the book, I asked about his reading tastes, and he

answered, "I'm not much of a book reader." In response to my follow up question about what he

liked to watch or play, he mentioned zombie movies; I asked what was his current favourite, and

he answered, "Uh, there's a LOT." Owen also read zombie books, which were not fiction books,

but were "survival manuals" in case of zombie apocalypse.

The Wolf Among Us, his second choice, he called a "create your own storyline," in which

a number of familiar characters from fables live in New York City. The main character in the app

is the Big Bad Wolf, playing a sheriff who must solve a murder. The game player can emphasize

different parts of the Wolf's personality, "and you can either choose to be like, really mean and

all that, or you can be more subtle." The game included elements of magic, and if the Wolf gets

extremely angry, he becomes a real wolf, and risks being sent away from the city. Owen had

played four episodes of the app, and was waiting for the fifth to be released. The app had much

flexibility, and as he was waiting for the new version, he would replay previous releases, making

different choices to build a different storyline.

Alicia (age 13) spoke about her chosen materials after her brother (age 11) had finished

speaking. She appeared to be a serious girl, who listened carefully to my questions and prompts

before answering. In the course of the full session, I learned that she was interested in becoming

a forensic archeologist, and could easily explain what that work entailed when I said that I had

never heard of that kind of career.

Her choices were one book from the series, *A Series of Unfortunate Events* by Lemony

Snicket, and the microblogging platform, Tumblr. Alicia described the series as "a giant

mystery," in which clues were threaded, leading readers to the next book in the series. She had

read the series at least twice, but even so, she felt she hadn't completely figured out the mystery.

The last time she had read it was in fourth grade, but she retained her enthusiasm for the series at the time of our session, three years after her last reading. Alicia indicated that she gave some thought to format in terms of her media preferences, saying that when reading print books, "I can get more into the story and more involved and with the e books, not as much? Like, I feel--more in the—world. If I'm reading print." She used Tumblr primarily for her interest in the "fandoms," where "a bunch of, like, people get together and they talk about books they like or a TV show they liked [...]" Her favourite fandoms at the time were all television shows: *Supernatural*, *Sherlock*, and *Doctor Who*. Participants in the fandoms post art and their written stories. Alicia herself wasn't so interested in creating additional material, but reposted others' posts on her own account. She found that at times, people argued passionately on the fandoms, and rather than getting involved, she chose to ignore them. She does use the platform to find other kinds of information: "there's also – other sides where...like science sides ...health sides, everything. [...] I think I was looking at a chart for science or something like that and I couldn't find it. So I typed it up on there and there was a whole big discussion on it, like explaining it, and charts showing [...]."

During my session with **Edward (age 13)**, he asserted his individuality explicitly, saying several times after offering an opinion, "But that's just me. I'm not other kids." He was interested in games that were "upbeat," not in the horror genre or the first-person shooter, as he said most kids his age were. Our interview took place at his family home, around the dining room table, while his mother and younger brother baked in the kitchen. Edward had much to say in response to my questions about his interests, prior knowledge about the environment, and

opinions. He spoke with a straightforward confidence, never demeaning others' interests, but making it clear that his were different.

Edward was reading the book *Allegiance*, from the *Divergent* trilogy of dystopian young adult novels. About the book, he said, "I enjoy the concepts,but um, at this point I'm starting to think that it's overdone. As you know, uh, there's just entire book market is just flooded with these things where kids have to fend for themselves and, [...] to be honest, it's getting a little bit you know, overdone." He could easily name other books in the same genre of fiction that contributed to the glut of this type of book: *The Maze Runner, The Hunger Games, Battle Royale*, and the *Percy Jackson* series. Edward said that his interests were "normally in flux, it always changes. [...] I'm very maybe into a video game for like a week, do something else for a week, back to the video game." Turning the subject to video games, I asked how he determined that a game appealed to him, and he mentioned that he watches video reviews on YouTube, and "then I draw my own opinion from that." He suggested that he was interested in items "that seem less prepacked. [...] I prefer things that are more, seema little bit less like they're just trying to appeal to like, the mass." He repeatedly watched the video reviews from a select group of reviewers, or at times, watched the YouTube serial Total Biscuit, or the Investigamer. He did note, however, that he felt suspicious of a trend he saw where game companies posted reviews their staff wrote, but presented as "journalism." YouTube was more transparent to him as a platform, since he could see who the specific reviewers were. He extended his trust to certain massive multiplayer online role playing games (MMORGs); he preferred to participate in those MMORGs like Pokemon, in which he said, "It's a very welcoming community. It's like the people are more, you know, like trustworthy."

Devon (age 15) and Allan (age 11) are two brothers, who participated in my session simultaneously. Talking about his academic interests, Devon said, "I'll probably go into a career involving math, but you know, art is a lot more fun." He makes hats, and was animating a short film. Allan belongs to his middle school's "movie editing club," which had recently made a short movie to explain one a subject unit in one of his classes. "I played a grumpy old person, who got to ham up his role. It was kind of like *Willy Wonka and the Chocolate Factory*, except with Language Arts." Allan wore a bow tie with his t-shirt the day we met. The brothers showed me the trailer for their planned animated movie on YouTube. Devon makes the animation, based on a comic that Allan had drawn when he was about ten years old. Allan is responsible for sound effects, music, and creative direction. Devon prefaced the video by saying, "This is stuff that I didn't quite finish, like half-baked stuff." Allan followed up with, "What he's saying is, it's not very good." Throughout our session, the brothers continued to banter like this, contradicting each other, or one rephrasing the other's statement. Still, they demonstrated some respect for one another. Allan deferred somewhat to his older brother, never actually interrupting him even when he had something he really wanted to say. Describing how he decided to animate his brother's comics, Devon said, "Recently I kind of unearthed this stuff and I thought hey, this would make a cool movie!"

The trailer was a one-minute, simple animation about criminals chased by police, redrawn from Allan's old comics, but still with a simple style. They were both working on a "full length" movie for the comic. I asked why they wanted to keep the trailer online if they didn't feel it was very good; Devon responded that in the process of working on the longer movie, he had lost lots of footage due to computer crashes: "I just wanted to say I got something *done*." Our discussion of the trailer drifted to informal talk about comparisons between Communist

propaganda and religious art, the superhero comics they liked to read, and the development of the comics Allan drew during elementary and middle school. Devon said he was very particular about the artwork he liked, and had a strong distaste for manga comics, and for abstract art. Allan said about his comic reading, "It furthers the experience if the art looks good, but, mostly uh, in my comic books, the thing that sells me is clever humour or good writing or good characters." He asked his brother Devon to name an example of a good comic; Devon replied, "Why don't you just say Calvin and Hobbes. That's a good comic strip." Allan responded, "Oh yeah. Calvin and Hobbes. It could have been drawn in stick men and I still would've liked it."

Rhonda's (age 17) voice is so quiet that I had to lean across her kitchen table and listen very closely; listening to the recording, it is at times a murmur. Her future plans are to take drama in university, as she has performed in several high school musical productions; this was a surprise to me, given her soft-spoken manner. She is the older sister to Sarah, who participated in my pilot session.

Her choice to demonstrate to me was the platform Instagram. She followed celebrities and her own friends on the site. Regarding celebrities, she said, "I think I'm more interested in the celebrities' photos than those of my friends. Just cause, they have like, exciting lives, and they're interesting to see what they do every day." She didn't often add to the accounts she was following, only "once in a while"; even so, she followed five hundred other accounts, with an even higher number following her. She also said she tended to check it most often when she was bored, waiting for something, or didn't have anything to do. She liked what she perceived as the relative anonymity of Instagram and Twitter, as compared to Facebook, where her friend list was composed of people she knew personally. Rhonda also disliked what she perceived to be a fake

positive self-presentation on social media in general: "I think a lot of people use Facebook and social media sort of like to just, make it seem like they're having like the best day ever. [...] I guess I sort of believe it. But, because I'm aware that a lot of the time [...] - it's just sort of like a wall they put up. I'm just sort of, sort of skeptical."

William (age 16) stated at the beginning of our session that he himself is very interested in design. He thinks about design often, and has strong opinions on what works. He had much to say about every one of my information materials, and expressed confidence in his interpretations of those materials, whether those interpretations were positive or negative. He was interested in potentially pursuing a law career after high school. He read mostly non-fiction, and read widely, on topics from humanities to the sciences. He repeatedly expressed great interest in my overarching research questions about design and credibility.

The item he brought was a game on his cell phone, called *Tiny Wings*; he brought it specifically because he said that it was an "elegant" example of design. He played it when he was looking to pass time, and when he felt bored. The game's premise is simple: to guide a small stylized bird in its flight path over mountains and reach particular landmarks. William said that its design and pleasing, "soothing" colours were part of what allowed him to play it over and over again, without getting bored. Another factor in his interest was that the game did not include "[...] intrusive advertising or anything like that, which is one of the biggest things that turns me off about a game, or about any kind of app." He also mentioned some other media that he return to repeatedly, such as the BBC series Planet Earth, a series with sumptuous cinematography.

Steven (age 18) is serious and focused about schoolwork and activism. When he speaks, it feels like he has been thoughtful about the questions I pose to him. He's interested in taking Journalism when he starts his undergraduate degree in a year or so, and although he says that he doesn't read as much as he plans to, it is clear that he is an intense reader. He reads much about Canadian and international politics, contemporary and historic. He is also a committed writer, having written publicly in different forms (blogs, freelance articles) since he was in middle school. My feel for Steven is that he likes to search out and puzzle through the complications when he is presented with information or texts. Steven described how ridiculous it was when his social studies class was instructed to come up with a solution to the Israeli-Palestine conflict in the space of an hour. If information doesn't immediately present as complicated, Steven searches for what could complicate it. His initial affective response to many of the items I show him appears to be a distant intrigue.

His information example was the book *The Inconvenient Indian: A Curious Account of Native People in North America* by Thomas King, a set of essays published in 2013. The book is high profile, having won several Canadian writing awards for non-fiction over the past years. He owned the book for some time before he started to read it, saying, "I remember it sitting in the living room, on the coffee table for quite a long time. I was always sort of intrigued by – the title. [...] I think that the title is very provocative and that's sort of one of the big draws. I mean it's obviously purposely done, sort of. You know, [the book] uses the word 'indian' sort of purposefully to provoke something." He was also attracted by the cover art; namely, the illustration's juxtaposition of a contemporary cruise ship being watched by an Aboriginal man in feather headdress, carrying a spear. Steven interpreted the cover as a satirical retelling of what he'd learned about First Nations people in school history books. Several times, he said that he

"loved" the essay collection, and read the book several times, "front to back," although he says that with other non-fiction, he often "jump[s] around a bit." His reading of the book was timely, he said, "because I guess I've been thinking a lot about these issues recently. [...] Around colonialism, like how can we sort of live fairly on this continent when we know the history of it [...] like is it okay to have guilt, and what can we do with that guilt [...]." Steven was also "quite impressed with how [King] uses humour with like, very shocking accounts of history." He had used the text for a "very high school project" in his Global Issues class, and underlined phrases which he found meaningful, allowing him to quote some of King's writings to me as we talked. Steven was also intrigued by the book's structure, and said that "even the way that the essays are written individually, like, they're sort of a whole bunch of different parts within the essays that makes it easier to flow from one part into the next. […] You can see how it's all connected."

Designers

Miranda works as an independent graphic designer, running her own business and working for private and public sector clients. Her projects tended to be for corporate communications, but she did design some work aimed at young people, contracted by the public sector. She is known for her distinctive illustration style in regional magazines and newspaper features; her design work has been seen in national and international publications. We conducted our interview session in her office, on the second floor of an older business building, while her two company designers worked a few desks away

Miranda spoke most about the aspect of colour in design, and chose to show me a logo that her studio had developed. She talked about the importance of a client making an initial design choice for logo "look" based upon black-and-white examples; using colour versions, she

said, tends to prompt a client to choose based not on the effectiveness of the logo, but on the basis of colour preference. Miranda spoke about her sessional work teaching colour theory in a graphic design program, and about the recent painting of her house to a bright yellow. For her, colour was one of the primary affective prompts in a design, and could easily dominate her clients' ability to "see" what was on the page.

Henry is a professional designer and art director, about fifty years of age. He is wiry and a fast talker, quick to speak his opinion with confidence. His professional experiences hinted at a great level of design knowledge. He made me laugh several times during our interview session, and his humour can be seen in some of his design, such as the fake advertisements in the adolescent health magazine he art directs. He's worked on the publication for seven years, and seems to have as much enthusiasm for the work as I imagined he did at the beginning. The magazine was supported by the regional health authority, and its purpose was to catch and hold young readers' attention in order to give them credible information on physical, emotional, and mental health. The magazine is overseen by a board at the health services level, and also has an advisory board of adolescents who write content; both boards give feedback on the magazine's design and content, for what sounded like different purposes. The health services board was one level of mediator that tried to ensure each issue was "appropriate" for distribution in local public schools, while the youth board provided feedback on potential cover designs and other aspects of the magazine. Mediation at the health services board level meant providing an outline of the content before any design had taken place for approval, as well as showing them final cover art.

To keep current on the ways that design for young people evolves, Henry said, "I look at music videos, I look at artwork for the kind of music they would listen to, I'm looking at street

art, I'm looking at graffiti." His goal is to design on the "edgy" side, to show teenage readers

work that is very different from most government publications. Consistently on Henry's mind is

where to find young people online. The publication has a Facebook page, which is "less

successful than I want it to be." He mentioned Twitter, Snapchat, Tumblr, and other platform

brands, saying ruefully that by the time these sites are more well known, the young people

seemingly have left them for other online domains. One of the strengths he believes he brings to

the project is his own short attention span, which he believes he holds in common with

adolescent readers.

Ella had worked on the same publication as Henry, and like him, she held strong

convictions about ways to design for young readers. One difference between the two was that,

while Henry was confident in his opinions of what those readers wanted after seven years with

the magazine, Ella emphatically insisted that adult designers had really very little idea of what

drew young readers' attention. Her story of conducting a focus group with young people is worth

quoting in its entirety, as it hints at the kinds of assumptions that mediators also make in terms of

what we believe to be true about young people's tastes and interests.

| Ella: | So when we first conceived of it, I remember, I remember very clearly we were sitting around a big table, talking to the clients or whatever. And probably the youngest person at that table would be about, maybe 27 or 28 years old, ranging up to probably about 60. [...] And we had such firm, like in hindsight, we had such strong ideas about what kids like? And me personally, my opinions were probably the strongest of anybody's. In hindsight, probably based on remembering my own teenage years, Or, talking to my nieces and nephew, anecdotal things, whatever. But part of the deal was, we said, we should do some kind of a focus group. [...] I had a bunch of questions in my mind that I wanted to test. But I kind of felt like I knew the answers already. [...] We got like a whack of kids in, aged from 11 to about 18 or 19, or whatever? In one take, we all had our had |

our minds blown, and we were so wrong. We were so wrong in so many things.

One specific example that Ella gave as a standard design rule that was "wrong" in terms of some young readers was the use of illustration rather than photographs on a magazine cover. She noted that it was assumed that a design has only a few seconds to capture a reader's attention, and so most effective to attract and hold that attention would be a recognizable face, such as a politician, cultural figure, or musician. She continued, "And what we found with the kids is, they actually really liked the illustrated covers, they found the photos of people boring. But they found them especially boring if they knew who the person was. And the things that intrigued them the most, and they were actually really articulate about explaining it, was if they couldn't quite, if they had to figure it out, so if they actually had to spend the time, to figure something out, that would be more of a draw, than if it were an instant thing." She gave several more examples of the focus group's feedback that surprised her during our two-hour interview session--one of the longest sessions I conducted.

Most of the younger participants in my sessions were not specific in their language, when they talked about what they liked and didn't like. For example, Elliot (age 11) talked about the characters in his *Pokémon* game as being "stronger and cooler" when they evolved in the course of the game, but I was not able to understand exactly what he considered to be "cool" about them. When we looked at information materials in which Elliot wasn't interested, we moved through and past those quickly, onto the next example. In the same way that all my interviewees had much to say about the items they had brought with them, items that they chose themselves and that they particularly liked, they had little to say about what they didn't like. The characteristic of having little to say about what one doesn't like was more pronounced with younger interviewees, although I noticed that a lack of interest prompted all interviewees to

speak as if they were "done" with the material in front of them. I suspect that participants'

impatience to move on to look at something which potentially would be more interesting for

them may have contributed to them having less to say about what they didn't like. Their lack of

interest may have been exacerbated by the fact that we started the sessions talking about

something they particularly liked; shifting from a discussion about a design of their choice and

preference to a discussion of pre-selected information materials that they may not like means

their interest level shifts.

Mediators

Although I detailed potential roles of the mediators of informational materials for young

people in my preparatory work for this research, I did not expect to encounter much discussion

of mediators: this audience is not the primary focus of my research. Further, I thought that any

work with the mediator role would come primarily from my review of the materials and the

published reviews of those materials. However, there were several points in which interviewees

discussed mediators, and two instances where parents were present during the interview with

their children's permission.

When parents were present during the interviews, they left their children to answer the

majority of my questions. Parents never stopped the interview, or interrupted their children's

talk. Occasionally a parent might prompt their child to provide a bit more information; the reason

that Alicia (age 15) told me she wants to be a forensic anthropologist is that her mother prompted

her to do so, as we were looking at the Prehistoric Climate Change site.

Designer Henry talked some about the distribution of the magazine he art directs for

adolescents, which is distributed through local schools on approval by the school board. The

magazine editorial staff provides the board an outline of the content prior to distribution, for each

issue (which is published quarterly). This magazine also has a board of reviewers at the government department level, which has sent a cover back for redesign, on the basis that they found an image too associated with violence (in this case, a smashed beer bottle on the ground). At the same time, several articles from the publication have been solicited by a Canadian educational publisher every year for reprinting. Students have also demonstrated they are well aware of the magazine's brand and style, a certain measure of success. Henry has received thank-you notes from young writers saying, "Thanks for making my story look cool," of which he is clearly proud. To date, Henry has not encountered any negative responses from parents. Here, the designer is dealing with various mediators: his editorial board colleagues and the governmental review board at the production level, and the school boards at the distribution level.

Sometimes interviewees interpreted individuals "speaking" in my informational material examples as informational mediators (as opposed to "access" mediators). Designer Henry, for example, thought that Annie Leonard in *The Story of Solutions* would not be as compelling to young viewers as would a spokesperson their own age. Edward (age 13) preferred to seek out independent video game viewers on YouTube to guide his game choices over industry journalists, whom he believed to be paid by companies to give their own games good reviews.

Format Preferences

Format pre-supposes a number of the kinds of choices that a designer can make, Questions of format are often discussed by librarians in terms of building collections. When new formats become commercially prevalent, staff at libraries must discuss whether or not the library's primary user groups have access to the technologies to use these formats, and whether or not they are a good investment of the library's budget. One example is the switch from movies

being sold on videocassette to being sold on DVD; in 2002, I had a conversation with a librarian at a large urban public library who said that her team were considering whether they should purchase in DVD format, what the likely circulation lifespan would be of the new format, whether it was more susceptible or more resistant to damage through use, and other questions. Today, there are enough commercially-available media works for librarians to ask questions about in what formats users and/or user groups may prefer their information. Within this question are finer questions, such as, are the affordances of certain media formats more useful for some content than are other formats? How true is it that young people prefer new media than older users do, as many librarians assume? Is it important to collect examples of new media, even if the content seems not as finessed as in more traditional forms of publication?

Several of my interviewees, both young people and adults, made some reference to their preferences regarding format for learning information. I previously noted that Devon (age 15) said he preferred a "wall of text and a worksheet" to a "poorly-programmed simulation" of science concepts. Steven (age 18) also noted that working with real fossils would be his preference over a digital experiment as seen in the *Prehistoric Climate Change* website. Edward (age 13), who uses YouTube for reviews of new video games, also says that it's easier for him to "absorb" information through YouTube. Edward further said that he likes a story to be woven with information in the case of the environment, "And um, if I'm going to read a book with an environmental message, if you can kind of like sneak it in? It's like way easier for me to digest." At the same time, Edward stated that he did not like the gamification of the *Prehistoric Climate Change* site, finding the leaf-sorting activity to be unengaging. He said, "[...] I know this is *definitely* not true for most children, but at least for me I would, I'd just prefer information being given to me." By "given to me," Edward was referring to a speaker giving the information, rather

than reading it. It is an apparent contradiction of his previous statement, where Edward said he wanted an environmental message within a story, rather than being stated outright. It's hard to understand exactly why Edward gave these contradictory statements; it may be related to his interest in stories (as he was currently reading the Divergent series), or it may be that the leaf-sorting game, created in 2010, didn't include some of the game features he enjoyed in his current favourite, *Pokémon*. (He liked the social aspect of playing *Pokémon* with many other players online.) This example suggests that within every categorization of format exist differences that can engage or frustrate an individual.

Of course, adding a story to frame information doesn't make for interest; Allan (age 11) and Devon (age 15) spent some time talking about movies such as *Fern Gully* and *Avatar*, in which they found the messages to be too "preachy." Owen (age 11), whom I interviewed with his sister Alicia (age 15), also had a dismissive attitude towards information that was aimed at young people and packaged with dated production values and content. Here he and his sister talk about *The Story of Solutions*, comparing it to a series he's watched in his French-language classroom called *On Y Va*, which also often has messages related to citizenship writ large.

Interviewer:	But what is *The Story of Solutions*? Why is that most interesting to you?
Owen:	It's kind of comical, like kind of funny? But, like, still
Alicia:	Getting to the point.
Owen:	Still getting to the point but in like a funnier way.
Interviewer:	Mm, right, then those sort of *On Y Va* videos.
Owen:	Where it's like, not really discussing anything.

Owen and Alicia further said that they enjoyed the way that they could engage with the leaf-sorting and even with the mathematical calculations, a point at which most of my interviewees said they wanted to stop with the site. Alicia, who wants to be a forensic anthropologist, wanted

to continue past the point where her brother requested we stop with this website. This resource was particularly attuned to her interests.

Prior Knowledge

When people learn new information, prior knowledge of the subject matter plays an integral role. Prior knowledge helps a person to identify that information is indeed new to that person, that it occupies a similar category to other information the person knows, and helps her or him to make sense of that new information. There is a growing body of work that seeks to map the relationships between a reader's interest, prior knowledge of subject content, and learning outcomes; these relationships are not yet well-understood (Schroeder 1420; Tarchi 80; Sullivan and Putambekar 299-301).

In the scope of my project, I did not assume that the information materials I brought to research sessions would be familiar to the research participants, but I did assume that the topic of "the environment" would indeed be familiar to each one of them. Information regarding the environment is available through many avenues: the news, lifestyle publications, how-to informational materials, blogs, educational materials, and so on. I did not have any sense of what reading or design conventions would be familiar or new to my interviewees. Certainly, designers have a body of professional knowledge, as well as years of reading experience. The three designers articulated some of the professional knowledge that they have gained through formal education and experience. Although all three designers whom I interviewed demonstrated some lack of interest in some of my material examples, they took more time to talk about what was not working with those materials and why. At the same time, designers and older interviewees could speak more concretely about aspects they liked as well than the younger people could, overall.

This could just mean that vocabulary for design increases as people learn more in general, and pay more attention in general.

I often assume that young people have strong technical knowledge of digital media (gained through use of the Internet and apps), but less knowledge of reading and design conventions. In order to understand more about how individual young people and designers' own prior knowledge and interest influenced their viewing and reading of my information materials, I asked them about their general interest in the environment as a topic. All participants said they had some interest in the subject, although there were many different nuances to each person's stated interest. A number of participants talked about the idea that the subject is "important" to our contemporary world. Most also gave some hints at the prior knowledge they held about the subject. Fifteen-year-old Devon said, "Oh, uh, yeah, definitely. I think that's definitely something that we need to preserve the environment, you know, cut down on uh CO2 emissions and that kind of stuff."

As I discussed in my section on credibility, it was at times difficult for my interviewees to parse out the aspects of materials that encouraged them to trust the information they contained. Drawing on prior knowledge is clearly one of the more accessible ways in which a person can decide whether new information is trustworthy; if it echoes information a person already holds to be true, it is logical to believe the new information. But the complexity lies in the details: how much information needs to be familiar? Does it matter whether or not the extent to which an individual is invested in that subject? This excerpt from my discussion with Sarah (age 11) provides an example of the complexity within a young person's assertion of trust.

Interviewer: Do you think that out of all the things that I showed you, and you just got little bits of information from them, but do you think information in any of them is not true? Are there any of those that you think are not true?

Sarah: I think they're all true.

Interviewer:	Yeah? How come?
Sarah:	Mmm. Because I've heard them before? Through school.
Interviewer:	Okay. Okay. And how do you mean that you've heard them before?
Sarah:	Like, I heard the information, like let's say the population [from the *Green Guide*]? But I'd like to learn more about it. Like politics—poli-tic-al? Political things? um, uh, the dinosaur things, cause I go to camps in Drumheller about dinosaurs?

Some participants also talked about what they were doing to conserve or save the environment, unprompted. Devon (age 15) said, "I try and walk places, you know, that kind of stuff." Later, when he was talking about the book *This Changes Everything* by Canadian activist Naomi Klein, he added, "I thought it was definitely interesting. You know, it's common sense to fix the environment [...]"

Prior knowledge of some of the authors of the information material came up as well. Devon noted, when we started to look at the *Green Guide*, "Uh, David Suzuki, I think I remember once seeing him in an old cartoon that I watched when I was Allan's age [11]. Yeah, I can't remember the name. It involved something about a film director? I don't know, I just remember something about not liking the cartoon much. And wondering who David Suzuki was. And then a few years later I Googled him, and found out who he was." After our session, I Googled: "David Suzuki cartoon" to try and find reference to this program, but couldn't find any relevant results.

Devon and Allan could list several movies addressed to young people that they felt highlighted the importance of the environment, in a "preachy" way: *Fern Gully: The Last Rainforest*, *Avatar*, and *The Lorax*. Younger brother Allan followed this list with a mention of *Birdemic: Shock and Terror*. "They're saying that if you cut down trees, then the birds will go crazy and explode into acid."

The *Self Sufficiency* book's layout is patterned after the DK books published for young people, and as it features the red DK logo prominently on its cover, prompted some participants' recall of the other DK books with which they were familiar. Allan said when we were looking at it, "It reminds me of you know those, books that you have in like third grade that they keep on shelves and they're like, all about food, and like all about crime investigations. In fact, I think this was published by the same company." In response to Allan's point, the three of us in the room said together, "DK." Steven (age 18) recognized the publisher's brand as well. Other examples of interviewees recognizing visual aspects of information presentation include when Devon (15) also spoke about visual recognition of information types when he talked about how the *Prehistoric Climate Change* site reminded him of the "stupid and boring" digital science labs he had encountered in junior high. Tara talked about visual recognition in terms of brand, mentioning she'd used the *Prehistoric Climate Change* website for a prior project. Visual recognition can be considered as a form of prior knowledge, along with knowledge of informational content.

Some of the participants used their discussion of prior knowledge as a chance to emphasize what they knew already about the topic at hand. I interpreted this as one sign of an engaged conversation; if a young person talked about an issue related to the materials at which we were looking -- or even if they brought up an issue tangential to the material -- it seemed to be an effort on their part to keep the discussion going, and to articulate that young person's contribution to that discussion. This seems like a minor point; however, I believe that it is useful for librarians (and other moderators of media materials for young people) to think about a young person's prior knowledge as a point at which to understand something about that young person's interests. Often, librarian literature discusses information materials as having a strictly

educational purpose, rather than a purpose of reading or viewing pleasure, and I believe we emphasis the education aspect particularly when we are talking about young people. This example is a small reminder to librarians to consider young people as readers and media consumers who have particular reading histories and interests that have built up over time, even if that time is short in comparison to adult readers and consumers. It is also a small reminder that while a young person's history and interests with reading has built up, so has their own knowledge about particular subjects.

I saw an example of this when talking to Edward (age 13). His mother and father are both contemporary artists, and have worked in secondary education and in the trades. Not surprisingly, Edward had much to say about the subject as a whole.

Interviewer: Um, is the environment something you're interested in, or not interested in?
Edward: I'm, I'd say I'm pretty invested in the health and safety of the environment.
Interviewer: Okay. Yeah? Is there anything in particular you interested in with it, or?
Edward: Um, I'm more interested in uh, you know, um, planting, um you know, the more we plant things, we could um, be – it's….that could be taking so much carbon out of the air. In my opinion, uh, that's probably the yeah, I'm just into more of the green sort of way?

His interest in "more of the green sort of way" seemed to be in contrast to a more technological solution. "I think that just planting more trees and stuff is the way to go instead of just like, well like, turning off your lights or something like that? […] if we just plant like much more crops and more grass across earth in general, then we will – it'll be a game changer, I think."

At other times, young people expressed some mild concern that they didn't already know or remember some of the information presented in my materials. This was particularly true in response to the *Prehistoric Climate Change* site, in which users are assumed to know some information required for interacting with the site (e.g., the formula to convert Celsius

temperature to Fahrenheit). Devon expressed some irritation at not being able to recall the

temperature conversion formula. Steven (age 18) off-handedly commented on the site's animated

timeline of the Paleocene: "Why wasn't – I didn't learn this in high school. I don't know if it was

before." I asked, "When do you learn about sort of, the ancient birds? In school, do you

remember? Like, did you?" to which Steven responded, "Must have." Both Devon and Steven

guessed that the audience for the *Prehistoric Climate Change* site was in middle school, or even

younger, and each expressed some surprise that he didn't know all of the information to which

the site referred. They each seemed to think that the issue was his own memory, rather than an

unevenness in the site's information delivery. It may also be that when a person decides that an

information object is created for a particular age, it is easy to also assume that *all* the information

within that object has been chosen appropriately for that audience as well.

Designers' comments about the five material examples I presented tended to focus on

opinions and interpretations as to whether or not a design choice "worked" from their

professional perspectives. Designer Miranda, who repeatedly referred to the function of colour

throughout our session, wondered why the *Prehistoric Climate Change* website design used what

she termed as "80s colours" of pink and maroon when presenting information on the prehistoric

natural world; in her opinion, a fresher palette using greens would have been more

communicative and appropriate. Ella, who had worked on a government health publication for

adolescents, often spoke in general rules she had learned about design. For example, talking

about the youth publication she designed, she spoke about choices she had made for teenage

readers in contrast to understood rules that governed her design for adult readers; these rules

included such things as smaller font size, the use of illustration as opposed to photography on a

magazine cover, and "skewed" angles, as opposed to square grids for layout. She noted that work

for adolescent readers could break the rules of simplicity and clarity that she knew would work

for adults.

Henry, the designer with a short attention span, also talked about his own experiences in

relation to the materials I had brought, specifically the *Atlas by Collins*. He had looked at several

of my materials and quickly summarized them, and then said he was done looking at them. In

contrast, of the *Atlas*, he said, "I could play with this all day." As he spun the globe and zoomed

in on geographic areas, he mentioned that he had used a similar tool when he was planning a

recent Australian vacation. His personal memory sparked a short discussion of a time during that

vacation where he was interested in particular information that his app could give him.

Henry:	I wanted to see where I was, in relation to, I was in Tasmania. So nice and warm there.
Interviewer:	As compared to, like what latitude are you, kind of?
Henry:	Yeah. I think we're latitude 53? And if you were to flip them around, they would be on par with northern California.

This tangent of our discussion extended into Henry's general interest in mapping and globes. He

talked about an article he had read about the last publishing company that builds globes by hand

for sale. I spoke about the strong collection of maps and globes at the university where I work.

Henry then talked about the *Atlas by Collins* in terms of its audience appeal.

I think this is the kind of thing that no matter what age you are, you're going to – I could

do Google Earth with my mother, who is 80. Like she'd be really really fascinated with

how this would turn and stuff like that. She could do that. [...] So I, I think this is a good

way of finding out about places.

Ella talked about various places she had traveled to as well, as did Tara (age 11).

There were also times when an interviewee's talk about interest in the environment

helped me to understand more clearly if a person's lack of interest in the item was connected to

the information topic, or to the presentation of that topic. Designer Miranda noted that the *Self Sufficiency* book's topic was of interest to her, as she likes gardening, "making, doing cooking things." However, she had multiple criticisms of the design choices made for the book. What is interesting here is that for her, as a designer, the content always came second to her evaluation of the design. Miranda is interested in the topic of self-sufficient living to the point where she has read books on compost toilets and living off-grid; at her first glance at the *Self Sufficiency* book, she said, "I guess this is a topic that I would be personally interested in." All of her comments on the *Self Sufficiency* book, as she flipped through it, were critical about the use of colour, the "busyness" of the front cover and other aspects. In this example, Miranda's professional knowledge superseded her interest in the topic at hand, although I would have guessed that based on her past reading, this book would have been her favourite example of my collection. In contrast, she spoke positively about the cleverness of the design of *The Story of Solutions* video, and did speak to the content to some extent in that example. Miranda is the woman for whom design serves as a "deal breaker" for whether she chooses to read a publication, saying that if she looks through her holds at the public library, she will not borrow any books for which she finds the design to be ugly. Certainly, for a professional graphic designer, this may not be a surprise; but Miranda was different than Ella. Ella criticized aspects of all my collection items, yet continued to read and view the content, regardless of her aesthetic response. At one point during our conversation, Miranda wondered if she was being too critical of the information materials that I had brought; when I assured her that I was only interested in her responses, whether they were positive or negative, she said, "Well, and maybe I have different expectations too, because of my design background." Certainly, she was very clear on what her tastes were in design, and was easily able to suggest changes that would make a design work for her. However, as I have

noted, even amongst three designers, their responses to individual materials were quite individual themselves.

Rhonda (age 17) is quite soft-spoken, so much so that at times I couldn't hear her voice on the audio recording of our session. She tended to respond to my questions briefly, as opposed to some of the other young people whom I interviewed. When she talked about my information materials, she spoke directly to the content, and evaluated it in ways that sometimes surprised me. For example, she said that her main interest in the environment was around issues of conservation, and spoke several times during our session on wanting to know what to do, to not feel helpless. She said, "I don't know what's working and what needs to be done." At the point in the video where narrator Annie Leonard suggests that households should share equipment and tools, rather than each family owning its own, she said, "Well, once she started saying, like, you shouldn't like own your own tools and things like that, and those things that you keep in your house. I didn't really understand that." Rhonda articulated very specifically where the video's information did not fit within her own understanding of how individuals can help the environment.

Steven (age 18) spoke often about his own prior knowledge during our session. He had, as I have previously mentioned, taken on the issue of conserving the environment as his "first cause," at age ten. He owned a copy of *David Suzuki's Green Guide*, and mentioned that Suzuki's work had prompted Steven to become a vegetarian; the author had written that ceasing to eat meat was one of the most impactful things a person could do to help the environment. Steven follows David Suzuki on Facebook, and talked about the Blue Dot Campaign, addressing issues around water as a human right. Of course, familiarity with a work doesn't mean that a person can recall all the elements of that work; as Steven flipped through the *Green Guide*, he

said, "Um, I should open this book more often, though. Because there are recipes in there. [...]

Cause I love cooking, recently I've been like cooking a lot." Attention to content for Steven here,

is contextual, and situation-specific.

Prior knowledge was sometimes expressed by an interviewee not just in terms of discrete

facts, but as a way of that person reasoning through whether or not she or he trusted the content

at which we were looking. I saw this method of reasoning repeatedly used by Steven during our

two-hour session. As we watched and talked about *The Story of Solutions*, Steven observed that

the video emphasizes the power of groups of individuals working on local solutions to build into

a larger movement. The video's rhetorical purpose is to convince individuals watching to build a

mass movement. Steven took this as a jumping-off point, to talk through his questions about

"mass communications" in general, as well as questioning the idea of the moral rightness of "the

people."

Steven:	And maybe it's almost like – like I don't wanna sound like – this pretentious – but I feel like the majority of the people like, "the masses" can be wrong. Like they can be wrong a lot of the time.
Interviewer:	Yeah, yeah.
Steven:	And like, that doesn't mean that I'm right all the time,
Interviewer:	Yeah.
Steven:	I'm not necessarily – but like, yeah if if everybody is sort of on board with it,
Interviewer:	Mm hmm?
Steven:	Then it almost like makes it less credible. Which might seem odd, but...
Interviewer:	No, I get it. I've had that experience. I've definitely had that experience.
Steven:	Because I mean this is a ridiculous and absurd sort of comparison to make, but like, the Iraq war,
Interviewer:	Yeah.
Steven:	Like, the masses were supportive, I feel.
Interviewer:	Right, right, right. Yeah, we certainly saw a lot of um, we certainly saw a lot of people saying, of course I believe this. Yeah.
Steven:	Yeah, and like even, thirty percent of Torontonians still support Rob Ford.

I've included my own (very limited) responses to Steven's thoughts to demonstrate that in this instance, he was talking through his own understanding of why he assigns credibility very much on his own, without prompting from me as the interviewer. Steven is taking a belief that he holds (that the masses can be wrong), and using the video's appeal to the "ordinary person" as a point to prompt an examination of his belief. He continued to talk through his beliefs, as he critiqued the idea of a ban on plastic bags as making a difference.

Steven:	I've never really liked that whole, like, it's just one step in a greater plan kind of idea. Like maybe just because I'm impatient, but like, oh yeah, banning plastic bags you know, who knows by then.
Interviewer:	How do you feel when you hear about that kind of approach?
Steven:	I feel like it's a bit of a copout. Or, like okay we can feel good about banning plastic bags because that's like one sort of step. But everybody knows that's just banning plastic bags isn't – do – much. And maybe that's a bit also like, cynical, or not appreciating the power of the people, or whatever. I've just always found that a bit like, a bit, underwhelming that idea. But then I'm just not like I have something better to propose. [...] Yeah, and then, this doesn't actually have to do with this. Well it does. But I was just hearing on the radio earlier this week, or last week, the Australian prime minister just sort of revoked, or got rid of their carbon tax.

Other instances where Steven used my information materials as a point of discussion for his interests included his discussion of how Israel and Palestine are represented on the *Atlas by Collins*, which shifted to his story of the perspective of a Jewish Israeli classmate in his global issues class, who believed that the entire area is part of Israel. He also said that in the same class, the students were assigned an essay to "come up with a solution for the Israeli-Palestinian conflict."

Steven (age 18) has been a lover and collector of maps since he was in elementary school. During our talk about the *Atlas by Collins*, he had some interest in the functionality of the app, but spent most of his time asking questions about the environmental statistics below the app's surface. Most often, he would ask some form of the question, "What does this representation really mean?" As we looked at pollution indicators around the globe, he said, "Like what are these – all these oil slicks? Cause when you said – I imagine, I imagine the top of oceans with oil. But I mean, is that what it really means?" He was not surprised to see high levels of air pollution in many Asian countries, but was unsure about high levels that showed over sub-Saharan Africa. He reasoned,

Steven: Cause like, it's not like there's much industry in that area. But there's probably lots of coal burning.

Interviewer: Ah, right. And you know, it's weird, it's weird how much I forget about coal. Cause it's big.

Steven: Yeah! And the fact that we still use it, even like in North America.

We talked further about what he knew of algae levels in his city's local lakes, mentioning that he had heard at least one of those lakes had a decade left before it was declared "dead." I asked about the source of algae bloom, and we both thought we remembered that this was related to fertilizer runoff, which we thought would be high in the Canadian prairies, and would spread easily through river networks.

One interesting example of prior knowledge is Alicia (age 15), who talked about Tumblr as both a social media site, but also as a portal through which she could find information that helped her with her studies. She talked about the application's sides, which are a person's secondary Tumblr accounts, to categorize and find information.

Alicia: Um, yeah, there's also – other sides where...like science sides ...health sides, everything. Like, so if you have like- I know sometimes for school

projects I'm looking like for a chart of a certain thing I can type it up, and a lot of people will make them, like as long as you give credit to them? They let you use, uh, like their how-to or their guides and all.

Interviewer: Yeah, oh. Okay. Okay. So you use some of them for school.

Alicia: Yeah! Well... Cause, what was it? I think I was looking at a chart for science or something like that and I couldn't find it. So I typed it up on there and there was a whole big discussion on it, like explaining it, and charts showing, and it was really interesting.

Edward (age 13), seemed to approach the materials I brought with a capability to quickly and easily contrast what he read in my materials with what he knew already. He spoke haltingly at times, but also with a great deal of confidence that I found to be remarkable.

Edward: Um, but uh it's because uh the reason we don't use like, I think our only power plant is like in Canada, is in Ontario. Reason we don't use it is because of, I don't know, these people that just, like just base all their skepticism on fear.

Interviewer: So, feeling very worried about what happens if the plant melts down. That kind of thing?

Edward: Yeah. It turns – what they don't realize is um, nuclear fission, um, is just as safe as um, air travel.

Although Edward had previously questioned the use of highly technological solutions to environmental problems, he certainly expressed a great deal of his own knowledge about how energy alternatives to fossil fuels work. Here, as we looked at the *Self Sufficiency* book, he talked about his evaluation of the book's usefulness.

Edward: However, this book seems like it could carry a lot of information for anyone living on the countryside because it tells you how to use solar power and wind turbines. That is actually very smart. Because you have all this land, that's just begging to like, have some sort of like, something that could harness energy that could be like, wind turbines or like, solar energy. However, if we're talking about this being in Canada, and the authors seem to be living in England, solar energy doesn't seem – mm, I'd more rely on wind turbines because solar energy, in my opinion, uh, that

should stay in places like Death Valley, with like 24-hour sun, and an enormous plain? Like, flat terrain. That'd be perfect. Like, maybe in somewhere like California, or the States. However, in the cold winters of uh, Canada solar, um pan – solar, um units only have 20% efficiency. Um, tur – cut that in half with the snow, that's 10%. Cause then half again with the – how would you say that, with the nights, it's just, that's 5% efficiency.

This long explanation by Edward was punctuated only with my own noises of assent, as I said "yes," and "mmm hmmm," listening to him speak. My session with Edward (age 13) turned my mind towards my trust of his prior knowledge, because I was so taken with the confidence I heard in his expression. His explanation was prompted by simply looking at the cover of the *Self Sufficiency* book, and noticing the words, "Make a wind turbine." I prompted him to tell me what he saw inside the book, in addition to what he used from the cover as a discussion prompt.

Interviewer:	Okay. Do you want to take just a quick look inside before we get to the other? Because you get a lot of information from the book's cover, obviously?
Edward:	Yeah. [reads table of contents for 40 seconds] Uh, uh, most of the things I just read in the table of contents, I didn't know what most of them were.
Interviewer:	Okay. You didn't know, or you did know?
Edward:	Well, I, I, I did know, well, I have this like thin line, the things I did know, well, on this, right here [points to section of table of contents], I um know very well. I know lots about using solar panels and solar thermal systems.
Interviewer:	It sounds like you do. Yes.
Edward:	Wind energy, water energy, yeah. Water wheels? I don't really – I wouldn't recommend that for people in Canada. Because you don't see many like, rivers like passing through – also it's like you need a very rapid stream.

A hint that he was reading quickly and processing some of the text quickly was that he also expressed his complete disbelief in alternative medicine, which comprised a section of the book. He dismissed it outright, but maintained confidence in the subjects with which he was familiar.

Attention

There are a number of ways we can consider attention. Frequently in relation to young

people and design or advertising, it is suggested that there is only a certain brief period of time in

which to try and "capture" a young person's attention. There can also be a perception that in our

media-saturated world, that attention is a valuable commodity. There were some interviewees

who spoke about this, as an influence to whether or not an individual might or might not be

interested in any of my information examples. Here, Allan (age 11) talks about his thoughts on

the appeal of *The Story of Solutions* video to young audiences.   His brother Devon (age 15)

counters Allan's argument.

Allan:	Yes. I think this makes it easier to understand because, well, as I stated earlier, I'm a fairly lazy person, and this like, little kids don't have the attention span to like read a gigantic wall of text on Wikipedia.
Devon:	Yeah, but like little kids aren't the ones who are gonna change the game. So you know.
Allan:	Yeah, well, a lot of--
Devon:	I mean it's good to educate them.
Allan:	--older people don't have a lot of good attention spans either.

The brothers have two different discussions going on in this excerpt. One is that of the attention

span of young viewers, and the other is that of for whom the video has been produced. One of

the purposes of the video is to encourage action for the environment from the viewers. Narrator

and host Annie Leonard makes this clear through her phrases such as, "Come on, let's do it!" at

the video's end. Devon has interpreted Leonard's call to action as delimiting the audience for the

video; for him, he says action means older viewers, which conflicts with the video's animated

style and use of silly humour (e.g., the Barney the Dinosaur character). Allan, however, thinks

that the video is for all viewers, when he says that little kids don't have long attention spans, but

neither do adults, in response to his brother's argument.

Designer Miranda talked about attention in terms of lasting impact and memory, in this statement about limiting the use of colours in a logo: "[...] additionally, logos that are only a couple of colours rather than many are a little bit easier to remember."

Rhonda (age 17), a young person who is active on various social media platforms, talked to me about the differences in attention, using those social media platforms as examples. She spoke about attention on the writer of social media messages, and the benefits of using Twitter as opposed to Facebook as a writer.

Interviewer: What you said about Facebook is that you sort of feel like maybe you're connecting directly to people, like a relationship. And does Twitter feel less like that?

Rhonda: Yeah, Twitter feels less like that because um, yeah well, not as – I don't know as many people who have Twitter. Yeah it's not like Facebook where um, they're – you can – I guess you don't have like that, like the where you work, where you go to school, blah blah blah. You can just sort of like, on Twitter you can just upload a picture of yourself as like, your icon, and then you can – and then you just have a bio that you write. And you can put anything you want, then, and then you can just sort of tweet whatever you want to and it's basically the only information that you put out about yourself. It can be anything you want it to be. So it's more, I guess, for yourself? Like you can tweet at other people, so you can still get something back.

Rhonda spoke about attention in the context of my information examples as something she was willing to give up to a certain point, until she felt a lack of interest in further participation by encountering something she really didn't want to do: the mathematical formulae.

Interviewer: It's interesting because a lot of people do do that leaf dividing up, and I know they've told me afterwards that they don't really care. But it's interesting to me that people still do kind of the interactive part of it. Did you – have any specific thoughts about why you wanted to keep going? When we got to math, [you were] done.

Rhonda: It just told me to sort the leaves. So, uh, I was just like I'll just sort the leaves and then I started doing it, and just wanted to get the job done then.

> – then as soon as it asked me to calculate – I didn't really know what to do for that, so I stopped.

Rhonda's thoughts here provide me a difference model of a person's attention. She was willing to follow the instructions of the *Prehistoric Climate Change* site up until she didn't know what to do next, and also stated to me that she was done, due to not knowing what to do next. The leaf sorting activity didn't capture her attention in a strictly pleasurable or intriguing way, but it was something she was willing to begin. Then she wanted to complete the task, rather than quit during the task; that is, it wasn't uninteresting enough for her to stop. But when meeting the obstacle of a difference type of interaction with the site, she stated that she was done.

Edward (age 13) spoke about his own attention having a shifting nature.

Edward:	Uh, what I'm interested in, is normally in flux. It always changes. Very rapidly.
Interviewer:	So it sounds like you're kind of at a point of change right now, hey.
Edward:	I've always been like that, I've always been just kind of changed in-between things very rapidly. I'm very maybe into a video game for like a week, do something else for a week. Go back to the video game.

Edward had a meta perspective on his own interests and attention span. For him, the *Prehistoric Climate Change* game had a planned story it was telling, but it wasn't a story that was of interest to him.

Edward:	I know this is building up to something, but, I'm just not interested in like, kind – my patience is just – I have different types of patience. Like, if it's a game, it has to at least be a good one that I want to do. To make you want to do the interactive part of that.

A young person paying attention to media also can happen because of aspects of novelty of the format or item, or of boredom felt by the young person. William spoke about paying attention to the Tiny Wings game when he was bored, because it didn't demand much of him, being

"soothing," in his words. Here, Tara (age 11) touches on both novelty and on boredom as possible attention motivators. My own assumption that attention is a commodity that is fully given out of interest by young people is clear, with my question, "She's really into science, hey?" Tara sees greater subtleties in why a young person might pay attention, and tells me so.

Interviewer:	You're saying [interest in this object] really does depend on the person.
Tara:	Yeah. Cause I've got like, I keep on using my friend as an example. She would probably do something like this.
Interviewer:	She's really into science, hey?
Tara:	She's not really into science but she'd probably, if she saw it, she'd just look at it, and.
Interviewer:	And why is that, do you think, for her?
Tara:	I don't know. I know she's, she hasn't had like, much technology throughout her life. Like, she has two younger siblings, she's often been like, she's got like an eight-year-old little sister, and a four-year-old little brother, or something. And so often she's just kind of bored. [...] She's 11 as well. She likes reading, she likes learning about stuff. Her and I are like total nerds, [laughs] when we're together. Um, I guess she'd just look at it, something to do.

Here, Tara also talks about all of these subtle reasons for paying attention as being simultaneous motivators. The ways in which young people pay attention are more nuanced and multifaceted than I had originally assumed when starting this research. It may also be that young people pay "good-enough" attention, or employ the strategy of satisficing with respect to attention. Mackey describes that when enacting good-enough reading, "Readers make temporary decisions, invoke placeholders, put responses in abeyance and proceed with less than complete information" ("Good Enough" 429). This reading strategy is "a holding procedure to enable the reader to make progress" in the reader's forward movement through a text ("Good Enough" 429). In my research sessions, rather than ensuring a continuous forward-momentum through a text, applying good-enough attention would ensure that the session continued, and that we could leave behind a

less-interesting information material example to go to the next example. Or, to end the session altogether.

When I was interviewing Ivan (age 11), I also had the opportunity to observe that the place in which we experience information influences our attention and subsequent interpretations. Most of my interviews took place in quiet rooms, for example, in a library program room, in my workplace office, and at times, at the home of a young person with the permission of the interviewee and her or his parent(s). I interviewed Ivan in his living room, as his mother worked in her home office down the hallway. Ivan is an energetic person, dramatic and funny, and the least likely of any of my interviewees to be paying strict attention to the materials I had brought with him. He signed his consent form with the acronym, YOLO, for "you only live once." He brought the iPad video game, *Plants vs. Zombies*, to show me, and immediately upon starting the game, appeared to be intensely engaged with it, affecting a silly and dramatic voice as he described what was going on. His play was different than that of Elliot (age 11), who also engaged with his *Pokémon* game when we met. Elliot was less talkative when we met in a public library meeting room, and although he also made jokes throughout our session, his manner was much more subdued. In his home, Ivan seemed like he would have played his game for our whole time together if he could. With several of his own items in the living room or near at hand in his bedroom, Ivan would leave the room to bring out some of his comic collection, in response to my questions about what he preferred when he was reading. At one point during our talk, he got up from the couch and started jumping on the mini-trampoline that was set up in the room. He felt comfortable enough to play with my computer mouse and draw a box on-screen that he then manipulated while he spoke in a monster-like voice. The

number of other objects on hand that could attract and hold Ivan's attention were more than those available to Elliot (age 11) as I sat with him in a public library meeting room.

Rules of Notice

Rabinowitz's rules of notice share several commonalities with the principles of design. In his book *Before Reading*, he defines rules of notice as those conventions of the printed text that draw a reader's attention, such as titles and last sentences (43-4, 53). Elements of typographical style, such as italicization also fall into the category of rules of notice (54), as do volumes, chapters, and episodes, epistles and descriptive subtitles (58). Rabinowitz published *Before Reading* in 1989, writing primarily about literary texts; it should be noted that as of his writing, there were many fewer examples for general readers of uniquely-designed books. Of course, neither the graphical user interface (GUI) of the computer screen, nor the design possibilities afforded by the Internet were likely even imagined by the majority of literature readers. Thinking about Rabinowitz's examples above, from a time of fewer options, how can we itemize contemporary design elements in terms of rules of notice? While I may not be able to be exhaustive in my list, I can work with the five examples that I used in my research to gather a list of some.

Design: Directing Notice

Ostensibly font size, bold type, and change in font style are some elements of notice that readers are quite accustomed to, particularly knowing that we ourselves manipulate these elements in our own daily communications via email and word processing. Branching out into visual elements that can be manipulated for purposes of attracting, sustaining, and directing attention, I can list several: photography and illustration, use of colour (whether full colour

imagery, or spot colour used on images and/or specific words or parts of the textual work), and layout of page or page spreads. The increase in the numbers of individual elements that can be used for emphasis purposes can be multiplied into a seemingly endless combination of elements used together, or against one another to heighten contrast within a text, or in an attempt to make that text stand out against others that might be surrounding it. Here I would also note the use of white space in design as a convention that falls into rules of notice. While white space is less-likely to be noticed in a document that is strictly textual--even in a book of poetry, which tends to make more frequent use of white space than do other categories of texts--it becomes an important aspect of design. White space, as used in a complex layout that includes imagery and typographical text provides a space for the eyes to rest, and emphasizes what is laid out beside or after it.

I chose each information item I used in my research for their internal tensions, as well as for the contrast against one another in terms of format and design. In some respects, it may be easier to talk about interpretations of design aspects with a selection of materials that are all the same format (e.g., all print materials, or all website materials). I showed examples in the same order: Suzuki's Green Guide, the Strawbridges' *Self Sufficiency for the 21st Century*, *Prehistoric Climate Change*, *The Story of Solutions* video, and the *Atlas by Collins* app. The Suzuki book format is a plain, primarily textual, paperback; every item shown after that book contrasted against this "basic" text and differences were more visible, perhaps, because of the contrast.

Brand Recognition

Some of my interviewees spoke about brand, particularly with respect to the *Self Sufficiency* book, published by the notable publisher of information for young people, Dorling Kindersley (DK). Here is the discussion I had with Allan (age 11) and Devon (age 15), the two

brothers whom I interviewed. After an extended period of time in which Devon had talked about

his responses to the book, his younger brother Allan interjected, as he did often during our

interview, with, "I have something to say."

Allan:	It reminds me of you know those, books that you have in like 3rd grade that they keep on shelves and they're like, all about food, and like all about--
Devon:	Oh yeah.
Allan:	--crime investigations. In fact, I think this was published by the same company.
Devon:	Yeah. That company.
All:	DK.
Interviewer:	I was surprised when I found this because I didn't know that they published for adults as well as for kids.
Devon:	Yeah. I think I have a book published by them on architecture or something like that.

The DK "brand" is familiar through its presentation of information. A recognizable brand

doesn't necessarily mean that individuals see the familiarity as positive, however. William (age

16) also recognized the DK information format; he named the familiarity as "generic." He also

interpreted an "oldness" about the brand due to his past encounters with DK books.

William:	Because this design is uh, very generic, but it's also very old, I think? Like, old, I see really old books in my school library or in my old school's library, especially from this publisher.
Interviewer:	The DK, yeah.
William:	All look pretty much the same. Like the white background, and the title, and then stock photography. And so that's why I thought this one might partly be appealing to an older market. This one, uses much more modern graphic design.

William associates the DK books with an older generation (i.e., with books that would have been

"current" for adults, as the examples in his former school library are old books; he suggests that

the brand might be resonant for adults for this reason. Steven (age 18) also recognized the DK

imprint from books he owned as a child, and so interpreted the DK imprint as being aimed towards a younger audience in general.

William (age 16) also cited the consistent layout and design seen in many DK books as intended by the publishers to build upon their brand. "I think the fact that it's generic might actually be a good thing in some ways. [...] that's also their brand, it's like the are – they are THE informational book manufacturer."

Brand can also come in the guise of a famous person, as well as in a publisher's products. The scientist and writer David Suzuki is a noted Canadian figure, with great reach across Canada due to his CBC television show, his non-profit foundation, and his publications and speaking tours. Of the young people I interviewed, three had not heard of him, and ten found his name to be familiar. Devon (age 15) thought he knew who Suzuki was, mistaking him for a character on a television cartoon he had seen. All three designers knew Suzuki and his work. Still, there were varied responses regarding what Suzuki's image brought to individuals' minds. Designer Henry said, "I don't know how like, how like, how he's considered or thought of in that youth market." William (age 16) said just the opposite: he thought that David Suzuki would be easily recognized by "the younger, environmentally conscious people who are perhaps, almost the more activistic [sic] side of environmentalist." William believed that the *Green Guide* was working to appeal to the younger environmentalists who know Suzuki's work through the inclusion of "buzzwords" on the cover:

William:	'Be a green citizen. Reduce consumption. Sustainable transportation choices. Fresher, tastier, healthier, eco friendly.' Um, all those kinds of things are probably appealing to a market that is perhaps even internet savvy? In order to have those terms, to be like, uh, more appealing to people.
Interviewer:	So um, what you say internet savvy, you mean that those terms to you are sort of more, um,

William: Well, they're something you would see a lot if you were reading a lot of blogs which were related to the environment. And David Suzuki's name, especially if out on the West coast and he's very well known, lots of people with all ages.

William included himself in the audience for the *Green Guide*. He said, "A lot of people, especially in this province, don't like him, but they are not the market that this book is targeted for, so they put the name right here because they know that people will trust him. [...] Like I would trust him. I definitely believe his, most of his advice on how to live a, uh, more environmentally friendly life." William suggests that trust in terms of brand is also intertwined with positive perception of Suzuki; those who like Suzuki's work will likely trust this publication.

Steven (age 18) was the only person whom I interviewed who was familiar with the *Green Guide* as a publication. When we were discussing *The Story of Solutions*, Steven was wondering about the motivations and purpose behind the producers' creation of the video; he expressed some suspicion of the group possibly looking to build brand, or to associate their organization with the idea of progressiveness around environmental policy, and maybe even seeking celebrity.

Steven: Or like, why did they do this? What did they actually believe that this was going to create this change, this momentum? Or did they do it to do it? Ah, like...
Interviewer: Right. Like is it about them being an organization--
Steven: And almost a bit of celebrity or- but that seems ridiculous. Um, I feel like in this in 2013, like it is, -- like was it made to get shares, or to get views?

Designer Ella, when she was expressing her disappointment in the way that the *Green Guide* was designed, wondered why the "brand" of Suzuki wasn't leveraged in a way that was more attention-getting in this particular publication. She said, "If I was doing a David Suzuki

thing, I would probably have a picture of David Suzuki, because he is such a recognizable face? I mean, his name is too." Brand is known to be visual as much as textual.

Brother and sister Owen (age 11) and Alicia (age 15) spoke about brand in terms of credibility of source; Owen said that he believed that all my information examples were reliable, because nothing struck him as untrue. Alicia noted that one needs to watch for whether or not the information presented is reliable in a resources, but also said, "with names like David Suzuki and stuff are already kind of big names? There's more of a chance that it is, like, it is uh, not [a] trick."

And educational institutions certainly have a brand, and there are young people aware of this. William (age 16) noted that he would trust an article with "a major university's watermark, and, a respected researcher's name on it." Tara (age 11) recognized the brand of the Smithsonian institution when I brought up the website, based on a past example that a teacher had shown her for a school project.

Colour as Affective Cue

All designers, and two interviewees, discussed the element of colour for all materials. This is no surprise; colour is one of the most accessible and describable aspects of design aesthetics. Designer Miranda, for whom colour is a primary attention cue, discussed how colour can actually dominate her clients' responses to design prototypes, serving as a "distraction."

Miranda: You know, even when we do the logo design process, we develop the logo and present them always in black and white first. Because we don't want the client to make an emotional decision about colour. Because people actually will choose something that they like, that, or they won't choose something that maybe is the most effective choice, based on the fact that it's pink and pink makes them upset for whatever reason.

All the designers also stated that colour palettes can date a design, to its detriment. Miranda saw the *Prehistoric Climate Change* site as dated, due to its "maroon and pink" combination, saying "[it] looks like it's from the 80s." Designer Henry drew a comparison between the institutional nature of the Smithsonian and its colour choice for this web project, calling it "muted." Ella didn't spend much time talking about colour, but in summarizing her responses to the site, said, "Like if I wanted to get really picky, I could say: pink and burgundy," in a tone of voice that suggested it was an ugly choice to have made.

Every time William (age 16) looked at an item, he talked about the colours of that item. He introduced his chosen game, *Tiny Wings*, with a discussion of what he felt was its "elegant" and "soothing" characteristics: "[The game] uses a lot of kind of pastelly colours? So um, they're very soothing. It's a very relaxing game to play." For him, colour was an accessible design aspect to discuss, and he had firm opinions on what worked well together, colour-wise. This and font were his most-frequently discussed design elements. At times, it seemed that if he had no more to say about the object, but was still interested in talking about it, he turned back to the discussion of colour. For example, as our session neared ninety minutes, one of the longest I conducted, William (age 16) didn't seem strongly interested in examining content on the *Atlas by Collins*, unlike some of the other young people who spent time searching for places where they had traveled, or where they wanted to go. Instead, he talked about the use of colour in the app, and his pleasure in the overall palette used. He also talked about which aspects he found jarring. "It bothers me to no end when you have yellow roads in the middle of your, sort of, nice wilderness shot from above. It's just distracting." Colour clearly played an affective role for William, who is very interested in design as a subject. His responses supported Agosto's proposal "that young people would exhibit strong personal preferences toward different sites

based on their personal color, design, sound, etc., likes and dislikes" (18). Personal preference

has been connected tangentially to Kuhlthau's foundational work on the role of affect in how

young people engage with information (Agosto 18).

In contrast, Steven's (age 18) notice of colour was the starting point for a discussion of

other aspects of the information material. He noted the colour of the Suzuki book almost

apologetically: "Um, yeah, I – it's sort of an obvious thing when you look at the cover. The

Green Guide, it's green." He noted that he follows David Suzuki on Facebook, and that the

dominant colour of Suzuki's publicity materials there were blue.

Steven:	And so now his whole thing is blue.
Interviewer:	Oh! The water?
Steven:	And it's the blue planet, and so. Blue, his colours that mean different things, trying to get us to feel things.

He said that he had no colour preferences, in general, and didn't even like being asked what his

own favourite colour was. Instead, Steven was interested in what colour could try to

communicate, and how it could be interpreted. He often looked at aesthetic elements from this

perspective, sardonically interpreting the ornamental starbursts on each page of *The Green Guide*

as saying, "David Suzuki is the shining ray of hope." Steven consistently wanted to unpack and

deconstruct imagery and messages in all of my material examples.

Emphasis on colour during discussions was clearly also linked to whether the individual

being interviewed had a strong interest in colour as a topic of discussion. Designer Miranda had

taught colour theory at the postsecondary level, and talked about her own love for colour in her

personal life, including her recently-painted yellow house and her clothing choices; it's no

surprise that she spoke about colour with respect to all of my information examples. As a

designer, Henry spoke often about the attention span of young people, a characteristic which he

believed he shares with those readers. When Henry looked at the texts I had brought, he seemed most concerned with giving a clear, quick interpretation of the works as a whole. He took the most pleasure in playing with the *Atlas by Collins*, saying, "I could play with this all day," and yet our session still ended within one hour. Ella's examination of the information materials was more holistic. She alluded to colour a couple of times, but also discussed font size and style, imagery, subject matter, and the organization of the materials and their usability or lack thereof.

Articulating Imagery

Imagery is an aspect in all of the informational materials that I selected. Representations within the five information material examples include charts and graphs, photographs, drawn animation, and maps. Imagery appears in black-and-white and in colour, with some images' colour appearing "naturalistic" and others using non-natural colours for emphasis. Each material format allows different ways of viewing and interacting with the images; in both books and in *The Story of Solutions* animation, a viewer can simply look. For the *Prehistoric Climate Change* website and the *Atlas by Collins*, a viewer can move images around, clicking or touching to see information affiliated with the image, and playing a game with the images in the *Prehistoric Climate Change* site. Images are accompanied by sound in both websites. Speaking about the role of "the image" in a text is very similar to talking about "the reader" or "the book." It is a category that contains great variation and individuality. The variations between images with respect to their style, presentation, and affordances were clear in the ways that young people and designers talked about imagery during our interviews.

Here I want to underscore Moore's argument that observation requires both attention and effort. "Seeing is never 'just' sensory input. We observe (see, detect, perceive), on purpose, very often from inquisitiveness or obedience. When we observe [...] seeing is indivisible from

thinking" (Moore 28). If I accept this statement, then I also accept that if the young people in my sessions said little about one of the information materials, it isn't because they don't have a response; it is likely because they can't or don't want to articulate the response. This could be for a variety of reasons. In the context of the interviews I conducted, it seemed to me that my two older interviewees, Steven (18) and William (16), and all three designers had a larger vocabulary with which they could address some of the aspects they didn't like. As I discussed previously, Steven and William both spoke about images from the *Self Sufficiency* book as "generic," as if they were "stolen from Google Images." William spent a notable amount of time looking for the words to further describe what he meant by "generic." I compare this with the designers, all of whom had easily-accessible vocabulary to say why certain design conventions didn't work for them. Designer Henry suggested that the *Self Sufficiency* book had "traditional" fonts that were perhaps reaching to an older audience. He suggested that tones within the page spreads could have been varied for interest's sake, although he also said the book's layout was very navigable. In contrast, designer Ella felt the typefaces of the book were "friendly," (although this doesn't exclude the possibility that they could simultaneously be "old"), but agreed with Henry that the book's hierarchy allowed for easy navigation and scanning for specific topics. Designer Miranda didn't care for this book at all, disliking the density of the cover layout, saying, "I'm not really enjoying how this looks because I'm like, god this is so busy. What am I supposed to look at first?" This led into a short conversation about negative space, and the ways in which design choices can guide a reader's eyes through a text.

Brothers Allan (age 11) and Devon (age 15) spoke about their strong interest in imagery for communications. The "chosen object" they showed me was a trailer for a cartoon they were animating, that Devon had uploaded to YouTube. This cartoon was drawn by Devon, based on

comic strips that Allan had created when he was about eight years old, and they and their father

did the characters' voices. They felt it was "not very good," and wasn't indicative of the work

they were currently animating. Allan was part of the film club at school, and Devon liked to

make hats and design posters. Their preferences around imagery were a major part of our

conversation. Showing me some of their father's references books on Christian art and

Communist propaganda posters illustrated their differences in taste. These two books were on the

coffee table, and we were discussing them because they and their father (who sat in our

interview) were talking about about the similarity in rhetoric between Christian art and

twentieth-century propaganda. The Christian art book also included some modernist, abstract

works.

Allan:	I wanna show her the descent and the cross one that is--
Devon:	Which one? The one with the lines?
Allan:	Yeah. Well, all drawings have lines.
Devon:	Uh huh.
Allan:	This is apparently a descent from a cross.
Interviewer:	That's pretty abstract.
Devon:	Yeah. I have no taste for modern art myself.
Interviewer:	No? You like something really visual?
Devon:	Yeah.
Interviewer:	Yeah? Or really pictorial, I guess?
Devon:	Yeah.
Interviewer:	Yeah? Something that's a bit more narrative?

My fumbling for words to more specifically describe what Devon prefers in visual style hint at

some difficulty each of us had in talking about the visual. Devon refers to the abstract work of

the descent from the cross as "the one with the lines," and Allan corrects him, saying, "all

drawings have lines"; it's likely that for Devon, this artwork's dominant characteristic is the

foregrounding of lines as a representational technique. Although Allan wants to show me this

abstract work, he said, "This is apparently the descent from a cross," which suggests a bit of

suspicion on his part about the description of the painting. When I was trying to shift our discussion from what Devon doesn't like (modern art) to what he does like, I used the words "visual," "pictorial," and "narrative." None of these words seem to exactly fit what I was trying to say, which is closer to "realistically representational."

William (age 16) and I had a similar negotiation around vocabulary when we talking about design elements, and he ended an interpretation of a design element several times by saying, "if that makes sense." This may have just been a conversational tic, although William also would use multiple words to try and describe his impressions of design aspects. Throughout all the interviews, as I listened to what participants had to say, and tried to paraphrase it back to them in order to understand what they were communicating, I noticed specific instances in which it seemed that those of us in the session were searching for appropriate language to talk about the visual elements of information. This searching for vocabulary hints at the difficulty in parsing out exactly what aspects of design may affect us as individual readers. Designers tended to be able to speak more authoritatively about design elements, likely due to their own professional schooling and experience. Designers work with overall concepts in their planning and drafting stages; they attempt to embody those concepts in the creation of a whole design, which is built through small design choices and actions. It presents an interesting question to me: do end readers/viewers "see" an information object as a whole? Tractinsky suggests that aesthetic impressions of websites are "fast, enduring, and consequential" (1073). Are they so fast that it is extremely difficult to determine what a reader/viewer sees first and notices most?

Imagery was mentioned by several other young people as we looked at the items of their choice. I interviewed two sisters in two separate sessions, Rhonda (17) and Sarah (11). Each chose to show me the app *Instagram*. Sarah had a very interesting negotiation with the question

of credibility, as I have discussed previously, regarding her questioning of multiple accounts claiming to be "the real" Selena Gomez. Sarah also liked pictures of food, and preferred to look at images, rather than posting her own. Images were the first aspect Sarah noticed, with all materials that I showed her. For example, we looked at a 1960s paperback of Rachel Carson's *The Sea Around Us* (The interview with Sarah was part of my pilot, and so I showed her a slightly different configuration of materials than I showed to the majority of interviewees). I asked if she might pick up the book herself. She answered, "it kind of looks...difficult." I then asked if she saw anything interesting, or not, in the centre insert of black-and-white photographs. She flipped through the yellowing pages of text to look at the short series of images, which were poorly printed quality; she paused at one image of a rocky shoreline, with a small lighthouse. "Whoa, it looks like something's breaking apart there. There's a person. Hm. It looks like something destroyed the island or something?" Although she focused on the images after my prompt, she commented much more on the images than she did on the text. After the old paperback of *The Sea Around Us*, I showed Sarah the large *Self Sufficiency* coffee table book, and she immediately gave a kind of sigh, and began to flip through the pages. Her interaction with the images within all the information materials was immediate, and stronger than her interest in the text.

Her sister Rhonda (age 17) also talked about *Instagram* to start our interview. She also liked Instagram partly for the celebrity photos she could access, as well as for images her friends posted. She said, "I think I'm more interested in the celebrities' photos than those of my friends. Just cause, they have like, exciting lives and they're interesting to see what they do." Rhonda was most interested in the information she interpreted from the photos, as opposed to their visual aspects.

Rhonda: When I'm looking at the pictures I'm never really thinking about oh wow, look at the colours. Look at the way they took that photo. I know that Instagram is is used a lot for that, like amateur photographers, like post pictures on *Instagram*. And those are like – not why I use it. It's more about like, what's happening in the photo. It's like, you get like, like a glimpse into their life, like they're looking at it.

For Rhonda, images were a prompt for thinking and understanding more. She expressed a similar sentiment when she talked about the illustrations of the Paleocene landscape shown on the *Prehistoric Climate Change* website. "The sort of landscape [is] sort of interesting. Cause it's just so different from what the earth is now. And the picture was cool." She didn't just notice the "coolness" of the illustration, but compared it to the site's contemporary photographs of same landscape, now desert-like as opposed to the lush jungle from the Paleocene era. Images were not just attention cues; instead, they were points of notice along her viewing the information material over a period of time. Rhonda is soft-spoken, and looked at every material example for at least a minute before saying anything about it.

Brother and sister Owen (age 11) and Alicia (age 15) talked about imagery in terms of the function it served within the context of the information delivered. Alicia in particular commented on what imagery of the materials added to the information content. She compared the use of explanatory images in the *Prehistoric Climate Change* website to those used in *The Story of Solutions*.

Alicia: I liked – the cartoon? I liked that part of it – it just kind of gave you a visual aid? Instead of just listening on to her talk? Well, with the [*Prehistoric Climate Change* site video], how I was saying that they didn't really explain it? They did it – well, with the cartoons – when she said like the [GDP]. And then they looked at a little screen and it had the words which had, like the, the full definition of it. And I thought this one was more maybe more like – simplified?

Alicia's impressions were echoed by Tara (age 11), who stated firmly that she needed a visual aid to reinforce her understanding of abstract concepts such as those of economics: "I need to see it. For me to understand it. [...] It was a lot easier to understand than the last video." Tara and Alicia were not interested in the inclusion of video as simply a "talking head" explaining concepts. The enhanced information added to *The Story of Solutions* by its animated imagery was complementary to the spoken narration by the video host, Annie Leonard. In contrast, William (age 16) believed the black and white animated images were too simple for his tastes, and also too common in educational video use. About Solution's illustration style, he said, "I think it's used so often because it makes it easier to communicate the idea. [...] Because there's no distraction." William agrees with Alicia and Tara somewhat, in that the style of the animation contributed to the explanation of concepts; but in contrast, his preference is not for simplicity, but for pleasing colour and a more sophisticated rendering. The video's playful aesthetic did not appeal to him at all.

The *Prehistoric Climate Change* video included multimedia elements (illustration and sound, animated graphics, the leaf sorting game with calculations, and a video of a paleontologist), but was ultimately linear in its presentation. When we were watching the introductory animation we were only watching and listening. When playing the leaf sorting game, that game took up the whole screen, and so as we interacted with it, our attention was focused only on the information in front of us, without audio narration or on-screen instructions. *The Story of Solutions*, on the other hand, paired the narrator's earnest script about trying to "change the game" so that success was seen to be connected to concepts of "better" as opposed to concepts of "more." As the narrator suggested the pursuit of a consumerist model of success was "playing the wrong game," the animation took her metaphor and ran with it. Showing a

playing space similar to *The Game of Life*, game pawns became citizens, building alternative models to "more" and battling the larger, "corporate interest" pawns. The animation in Solutions illustrated the spoken narrative, but often included visual jokes that diverged from Leonard's earnest language and tone. The images then shifted from illustrating to paralleling the narrative. This made Solutions less singular in its presentation of information than the *Prehistoric Climate Change* site.

There were times in which interviewees spoke directly about how images influenced their perceptions of credibility. William (age 16), who placed so much importance on the aesthetics of all materials, had a clear distaste for The Story of Solutions. He disliked the tone of the narrator, which he believed to be patronizing, and also thought the drawings were in a style that were too simple for his tastes. He did not want to watch the whole video, contrary to all of the other young people I interviewed, all of whom did watch to the end. In our discussion, William seemed to be building a case to explain his distaste for Solutions as a whole, pulling out examples that reinforced his interpretation. Here, he talks about the narrator's presentation as part of his dislike.

> William: Also in the way she dresses. You know, certain dress pants. They don't want to make her look too formal, because they're railing against the global economy, but they don't want to make her look untrustworthy.

It is interesting to hear this critique from William of the narrator's dress. When he and I were discussing an illustration of the construction of a greenhouse in the *Self Sufficiency* book, he said, "if you just show the information in its most basic format, then that would definitely be something that I would trust a bit more." Annie Leonard's dress is, in my interpretation, quite basic: black pants and a blue button-up shirt. For William, he explains his affective response to the video as a whole through parsed-out examples. I see Leonard's dress as neutral, whereas William sees it as carefully chosen in order to help establish her credibility as a spokesperson.

One designer, Ella, spoke at length about images in design for young people. Through her experience designing for a young people's magazine, she had participated in some focus groups with young people aged eleven through eighteen. It was a dramatic experience for her, professionally, "In one take, we all had our had our minds blown, and we were so wrong. We were so wrong in so many things. And not just kind of wrong, like we kind of missed the mark like, a lot of our beliefs were actually the opposite of what was true." The feedback in this focus group influenced her subsequent design choices regarding both image and typography. She said that prior to sitting with the focus group of young people, she had held to certain graphic design "rules" of using photographs of famous people on magazine covers, rather than abstraction or illustration; this is in part, she said, because the image must grab a viewer's attention in three seconds in order to prompt them to look further. When talking to the focus group, however, she noted that the young people's interests countered her professional knowledge.

> Ella: And what we found with the kids is, they actually really liked the illustrated covers, they found the photos of people boring. But they found them especially boring if they knew who the person was. And the things that intrigued them the most, and they were actually really articulate about explaining it, was if they couldn't quite, if they had to figure it out, so if they actually had to spend the time, to figure something out, that would be more of a draw, than if it were an instant thing.

This is quite a different understanding of a young person's attention span than even a non-designer, such as myself, assumes about attracting the interest of younger readers. Of course, this is Ella's experience based on one group of young people; in contrast, designer Henry did believe that a cover only had a few seconds to catch and hold a young person's attention. He spoke about trying to "keep ahead" of adolescent readers for the magazine that he designed, saying, "they get bored very easily." For Henry, this meant ensuring that each month, the magazine cover was

quite different from the previous month, as well as a more texturized layout with sidebars and callouts, and satirical advertisements. (The magazine is a government publication, and so does not feature advertising to the extent that a commercial magazine would.) Henry made several layout choices that meant readers did not have to read in a linear front-to-back order: most articles fit within a two-page spread, and they are interspersed with one-page quizzes and playful factsheets. The back cover of every issue magazine features a full-page, slightly surreal image, such as a UFO displaying a banner with the magazine's website. Henry uses this tactic for the back cover every issue, to signal it as an entry point, and reinforce that the magazine doesn't need to be read in a linear way.

The two oldest participants in this group, 18-year old Steven and 16 year old William, spoke about elements of design in a way that bore greater similarities to the way the designers spoke. They addressed individual elements of design more specifically than did the younger participants. This may have been because the older participants were more focused on following my think-aloud instructions and responding directly to those instructions than younger interviewees were. For example, when he first looked at the *Self Sufficiency* book, Steven (age 18) said, "I feel like, immediately, all the pictures are just like clip art pictures."

Steven:	You would think they'd have stolen this from Google Images.
Interviewer:	Could have, I guess.
Steven:	I mean, they probably didn't because it's a respectable publisher.
Interviewer:	Right.
Steven:	um,
Interviewer:	But when you, but when you say, it could be clip art, that means that there's – you look at this kind of squash picture and you're not interested.
Steven:	No, I'm not interested, yeah. Like, - no. I like, I like the cat, but you know. [...] I sort of like that one, that one looks good.
Interviewer:	The one with the peaches, sort of? Yeah.
Steven:	Looks yummy. [...] Yeah but not too, not too intriguing, the pictures aren't very intriguing.

The images in the *Self Sufficiency* book are high quality, carefully chosen and idyllic images of the details of rural life. However, Steven articulates a suspicion of the professional look of the images, saying they are in effect, common, and could have been "stolen" from Google Images, likely the most common source of imagery worldwide. He has some interest in photographs of subjects he likes: the appeal of the cat picture, and of the fruit picture. Overall, there isn't anything notable for him in this design choice, because he sees high-quality images frequently. Steven is able in part to articulate his opinion because he is parsing out an element of design that he has noticed, as per my instructions to him for this interview session. He is speaking about the elements he notices and telling me about his opinions on these elements.

My session with William (age 16), echoed Steven's (age 18) thoughts on the *Self Sufficiency* book imagery as "stock pictures." The vocabulary that William used to comment on materials was unique to him, and expressed his care for speech; he expressed concern for finding particular terminology to describe his responses. He was not content to express his opinion simply, or once and move on, but seemed to be looking for the words he believed really expressed the meaning he was trying to articulate. If he didn't find the right word, he kept circling around his opinion, stating it differently, to speak it in a way that felt exact or accurate to him. Reflection upon visual texts may require a metalanguage, without which young people may "battle with vague generalities rather than insightful analyses, because they do not have the tools available to write about the images" (Archer). Archer refers specifically to written reflections here, but I see no reason why this cannot be also said of a spoken reflection.

I interpret William's comments from this starting point: that he was there to be able to speak his mind, talk about what he knows about design, and to talk about it in an exacting way. This extended excerpt from our interview took place looking at the *Self Sufficiency* book.

William:	Uh, very generic title page. Not generic in so much of a good way. The colouring is um, it's hard to describe it, it's– it's supposed to evoke vegetables, and environmentalism, and stuff. But uh, it also looks quite a bit like um, a school textbook. So it doesn't actually look very interesting, or exciting. And they've done this thing with the background which I don't like. In graphic design, I tend to prefer kind of um, bolder colours, and so they have this strange sort of dirty white, in the background, right?
Interviewer:	And it's not just because I've been hauling that [book] around.
William:	Yeah, I think it was there before. I don't like it very much. It's, it's not bold enough to have any big effect.
Interviewer:	Yeah. Contrast-wise, you mean?
William:	Yeah, yeah. I like – I like to have – contrast and I like that, I like the colours to be very sharp. Um, well maybe sharp's not the right word. But, you know what I mean. I like, I like, I like the colours to be very solid.
Interviewer:	Right, okay. You like a strong--
William:	Yeah, strong colours.
Interviewer:	Colours, strong contrast, maybe?
William:	Yeah. I think that's probably what I'm trying to get at.
Interviewer:	It's a bit washed out for you.
William:	Yeah, it seems very much like a pretty – generic kind of feeling design.[...] So overall, title page is not too appealing. And they've got stock pictures here. I'm not a huge fan of seeing stock pictures plastered on things.
Interviewer:	Mmmm. And you feel like you – you really – you can get those, you can, recognize those.
William:	I just don't feel like there's a strong brand here, like. Maybe brand's the wrong word. But I don't feel like it's terribly unique.

William (age 16) speaks about the images as contributing to the "generic" cover (although he said "title page," in this instance, we were looking at the cover), echoing Steven's sense that the images could have been copied from a Google Image search. He wanted to talk in detail about what was working and what wasn't for him, for every item at which we looked. He saw the cover of the *Self Sufficiency* book to be "generic," and still wanted to parse out the elements that made up this aesthetic judgment for him. William and Steven both critiqued the images on the *Self Sufficiency* book cover and inside its pages for appearing to be unremarkable. What is it about these professional photographs that are unremarkable? They communicate visually some of the

processes and themes discussed in the book, serving what could be called an illustrative purpose. A few are taken from unusual angles, some feature the authors and other people at work on their acreage, and the majority are images of plants and animals seen on a rural property.

I compare this to my pilot interview with 11-year-old Andrea. Andrea's item of choice was the Instagram app, on which she liked to look at pictures of food and of some celebrities, she said. After we had looked at the *Green Guide*, I brought out the *Self Sufficiency* book, and Andrea said, "Ohhhhhhhhh," in a long sigh. While she was not experiencing Stendhal Syndrome, Andrea did express an immediate surprise and pleasure at the *Self Sufficiency* book that I found remarkable, and that was the clearest expression of enjoyment I saw and heard from any participant. In fact, I took her response as the baseline for how I expected other people to respond, and felt somewhat disappointed at how ordinary other participants felt this work to be. My assumption points to my overreliance on a material as a response prompt, as opposed to thinking of the individuality of each viewer with whom I worked, and that each person would make their own sense of my information materials, based on their own interests and education along with the information materials themselves. As Moore states, "we can rely on our reactions and responses being entirely dependent on the sense we make of what we see. We respond to the world through intelligence and that response is informed by education (33)". I might too be expressing my own cultural learning about how Westerns often understand aesthetics to function, as dependent "on the idea of universal truth" (Moore 56). This may be understood most commonly in the realm of fine arts, but can hold true within the realm of design as well. While the *Self Sufficiency* coffee-table reference book is not claiming to present itself as a great art or writing work, its photographs of brightly-coloured vegetables, cute farm animals, and robust, smiling workers are objects of visual communication, which I have interpreted as signifying the

pleasures of rural self sufficiency. That Steven and William read these photographs as "stolen" or "generic" was a slight shock to me.

Moore reminds me of how viewers' responses to the visual are firmly rooted in their own perspectives, experiences, and education.

Discarding the idea that a place can 'speak' to you, reveal what it 'wants to be' by imposing on your thoughts as if the mind were an inert wax, we can now see it as simply something to which we respond. So when we are convinced and excited by architecture or a landscape, what moves us is a function of our needs, purposes and preferences, rather than a primal tug of recognition from somewhere deep in our subconscious or a mysterious empathy with the murmurings of a site. Ecologists will be excited by the possibility of increasing bio-diversity, hardened urbanites by the opportunity to create vibrant urban nightscapes or dramatic urban squares (Moore 61).

Applying Moore's reminder to Andrea, William (16), and Steven (18), I can see a pathway from some of the things they expressed earlier in our discussions to their responses to the *Self Sufficiency* book. Andrea's interest in food pictures on Instagram was a clear cue that some of the images from the book were likely to have appeal for her. William stated he was interested in participating in a session with me due to his own strong interest in design, and he spoke of the *Tiny Wings* game in terms of its graphic design aspects.

Layout, Sequence, and Texture: Moving and Feeling Through a Text

Young interviewees had a great deal to say about layout in the print and web resources, and the sequence of events in the digital resources that had a time-based element to the way they presented content. Interviewees interpreted layout in a number of ways. Some young people felt

that it signaled the age demographic for which the work was intended. For example, regarding

the *Prehistoric Climate Change* site, Devon (age 15) guessed that the audience for this site was

elementary-school-age, because "if this was for people my age, in my experience, it would have

been like a wall of text saying something blah blah blah [...] And then was, now do a worksheet."

Other interviewees, such as William (age 16), talked about the use of design to help prompt

information understanding and memory, saying of the *Prehistoric Climate Change* site, "They're

presenting the information in the simplest kind of way that they can. [...] With no extra frills, and

it's easier to remember." He thought the pacing of the site's narrative was also a cue that their

intended audience is young; specifically, the use of suspense as the screen faded from a

description of the time period to the words, "And suddenly" then shifting to the text, "it got a lot

warmer." The language in other parts of the site, as well, were informal enough that William

thought they were aimed at younger people, such as those if any of the leaves were sorted into

the wrong category: "Nope, that isn't right. Try counting again."

Steven (age 18), like the two boys previously mentioned, thought that the layout of the

Prehistoric Climate Change site included many smaller cues that were aimed at elementary-

school-age people, although as he looked at the site, he thought that there was some disconnect

between the site layout and the amount and level of text that was included on the site. This

disconnect prompted him to ask me if I knew the age group at which the site was aimed:

Steven:	Cause like, Smithsonian, I feel like it's kind of advanced, not sure but at the same time, like, it is... But what I do like about this, is it's one of those things that does sort of it-- seems like it could span a broad range of age groups, you know?
Interviewer:	Yeah. Because?
Steven:	Because like, with sort of like the flashing text, like [the bold and colour of the word] smooth, toothed. I don't know, that might sort of help younger readers, maybe, who would be interested in the subject matter. Like I'm thinking of my cousin [...], who's like interested in doing

something like this. But at the same time it's still sort of interesting for
someone who's graduated high school. [...] like me, I find it interesting.

Interviewer: Right. And some of that text is definitely um, you know, I feel like that
amount somehow is for an older audience.

Steven: Yeah, like it does seem like a lot of text.

Steven brought up the question of audience age for the site before I did, which surprised me; I asked each interviewee to give me their understanding the readers for whom they thought the materials were created. I had asked this question of him with the previous two examples we had discussed, so he likely knew I was going to ask about this item as well. It does seem that he asked me about audience when he was trying to understand his own notice and interpretation of what seemed to be incongruous design elements and choices. Steven spends time with his young cousins, both in elementary school, and so he has some recent experience of materials created for younger readers.

For the designers, their own preferred aesthetic came through in their desire for clearer attention directors. Miranda said, the *Self Sufficiency* book cover was too busy for her. She linked this preference to her professional knowledge, saying, "Well, the designer in me is just like, everything's just too crammed, not big enough margins. Not enough white space." Miranda looked for aesthetic pleasure in any media materials, including books, saying she would not read what she considered to be a poorly-designed book, because it would impact her experience of reading too much. "A well designed book cover with an engaging image or something like that I can relate to, I'll be like, what is this? But if it's like, it's just, you know, sloppy, or, bad typography, I'll pass over it." Design (including white space) guided her attention, as a cue of something that was worth her time. Miranda wanted deliberate choices to be made and used in designed information so that it facilitated her reading experience; with the *Self Sufficiency* book, she would have preferred the use of colour to signal different sections of the text.

Designer Henry called the use of a design cue to direct attention the "entry point" in information design. His "entry point" could be likened to Nancy Pearl's "doorways into the book." Pearl's four doorways of text are characters, language, setting, and story. The back cover magazine website promotion on every issue of the publication he designs could be seen as an entry point, as could a one-page quiz, or a callout box within a story. Designer Ella refers to the placement of entry points within the design of information materials as "texture." She said this about the primarily-textual Suzuki book, which she likened to a guidebook: "with a guide in my mind, you're looking for a specific thing, it's a resource guide. So you'd want lots of texture inside. So you could find entry points throughout it, rather than just this start to finish kind of work that it's got going on right now." Ella suggests that design choices can be used to delineate different kinds of information, to help a reader.

One young person who finds that kind of texturization very useful is Tara (age 11). She talked about her book, *Alienology*, the layout of which is extremely textured, to use designer Ella's word. Photographs, captions, and illustrations are laid out at various angles, to give a scrapbook-like look (see: http://ecx.images-amazon.com/images/I/9137oiYvp1L.jpg). The designers have chosen multiple fonts for different chunks of information. As we discussed the Suzuki book she had just looked at, Tara said, "I like it if they have all the information in there? But um, when they have it so close together, it doesn't look very nice." Turning to the *Self Sufficiency* book, she said, "This I'd look at. If it's like, words right by pictures, sort of broken up like that. When it's all – away from each other." She is a person who loves pictures, and seems to love the visual in general; the item she brought to talk about was the Sims game, in which she really enjoyed changing the look of the characters. Of textual books, she says, "But like, when

there are so many words put together, for an 11 year old, that's just so boring." Texture is an entry point for Tara, clearly.

Texture also seems to be an entry point for Henry, the designer who stated he has a short attention span. In contrast to Miranda, designer Henry didn't mind the busy-ness of the *Self Sufficiency* book cover, saying, "I like this. They've done some interesting things with the type, and they've got a lot of visuals, which is good." Here he isn't suggesting that the cover is appropriate for a young audience, but just that it is good in terms of being somewhat interesting. Henry works hard to make every issue of the government youth health magazine different, so as not to bore his perceived audience, and believes that he shares a similarly-short attention span with adolescents. Although Henry and Ella didn't speak about working with young people in the same words, they echoed each other in terms of their general comments about designing for young people. Henry attributed the need for entry points, non-linear accessibility, and surprising images (such as those on the back cover) as an attempt to grab a young reader's short attention span. Ella said that the issue for young people, based on the focus group in which she sat in, was actually that an adolescent reader will spend time on a design that isn't "simple:"

> Ella: And the things that intrigued them the most, and they were actually really articulate about explaining it, was if they couldn't quite, if they had to figure it out, so if they actually had to spend the time, to figure something out, that would be more of a draw, than if it were an instant thing.

Under her art direction, she chose to make the typography small with tight leading, overlaying imagery. "[...] this kind of thing where there's junk behind the typography, you would never do that for adults. Or you shouldn't do it for adults." Ella's design choices to challenge adolescent readers, and Henry's attempts to create varied entry points with each publication, I believe, are different methods of a similar approach to attracting the attention of their perceived audiences.

The reasoning according to each designer, however, is different: Henry believes it's a young person's short attention span, whereas Ella believes it is a young person's interest to work at visual and textual complexity.

Each designer's perspective has some echoes with what each his or her own interest seems to be in terms of design, as well. I have noted designer Henry's discussion of attention span several times. Designer Ella's interest in complexity regarding information materials came through in various ways. Ella spent time looking at all my examples before she would make a comment, usually between fifteen and thirty seconds looking at the material. In the case of *The Story of Solutions*, she watched the video through, making a few comments during its play, but comments aimed more at the video itself than about the video; for example, when one of the playing pieces is torn between continuing on the game path to "more," or choosing to create a new path to "better." It's a playful moment, in which the music from Strauss' "Also sprach Zarathustra," attempting to present the suspenseful nature of the piece's choice. As the music played, Ella said, "Do it!" to the screen. After spending some time with each example, she spoke about several different aspects of each. For example, with the *Self Sufficiency* book, she talked about the size, the smell of the book, the cover and the organization of information in its layout. She used expressive language to communicate her impressions, including the "extra friendly" typefaces, and the "texture" of the page spreads with their images and text. She then talked about the book as a whole, and its purpose as a whole: "[...] the subject matter is kind of -- [20 second pause]. So it's very structured. The kind of resource book that makes sense. Like this is a book that I would sit down to look things up." Ella is similar to both Henry and Miranda in that all three of them used their professional expertise to identify particular design elements that they noticed, and also used their professional vocabulary to interpret those design elements. However,

Ella is different in that in our sessions, she took the design elements of notice, and used them to talk in general about the work. Designers Henry and Miranda talked about elements of design as working or not working for them, and did not interpret information materials as a whole. Rather, they talked about the major elements of design that, in their opinions, worked or did not work for the example as a whole, and then showed less interest in talking further about the example.

Steven (age 18) described the level of detail seen in the page layouts of *Self Sufficiency*, as "in it to win it." That is, he believed the *Self Sufficiency* book, with its detailed explanations of installing solar panels, raising animals and home butchery, and gray water recycling systems, is only for readers who are ready to dedicate their time to the hard work involved. In contrast, he considered the primarily-textual Suzuki book as something a person might read out of interest, rather than only out of the intent to change one's carbon footprint. In other words, the *Self Sufficiency* book in Steven's interpretation, would be purchased in order to build one of the self sufficiency projects, not just for browsing as one might do with another kind of book. As Rhonda (age 17) said, the *Self Sufficiency* book looks very "hardcore," whereas she thought the Suzuki text was more feasible for a young person living in a city.

What, exactly, tells each of the young people that one book is more applicable to her or his life than another book? In Steven's (age 18) case, he owns a copy of the *Green Guide*, and is familiar with its contents, as well as with its author. He is a reader who doesn't shy away from complex and emotionally fraught topics, evidenced by his interest in books written on the situation of Israel and Palestine, and by his chosen book, The *Inconvenient Indian* by Thomas King. He has also had a strong interest in maps for at least the past eight years, collecting them every chance he gets. However, he said that he didn't like the large diagrams of how to develop an acreage, for example; he noted that this was "odd" for him, because he loves maps. He also

expressed some sense of overwhelm at the detailed instructions which the *Self Sufficiency* book

presented.

Steven: [...] Like, to capture the sun's energy, [...] your house, your ideal house
             faces south, [...] if you're at 67.5 degrees [...] then you get 36% gain of the
             sun's energy. Like it's a lot – it's a lot of technical stuff.
Interviewer: And it's, yeah, and it's deep, it's sort of deep down.
Steven: Which is good, that there's books that have that very deep knowledge. [...]
             I mean you obviously have to have that deep knowledge, [...] that very
             deep knowledge to do that. But for someone with just like a casual sort of,
             [...] flipping through, maybe Wikipedia's a bit better resource. [laughs]

A "textured" information layout doesn't necessarily make the information presented simpler, or

cause it to appear to be simpler to others. For Steven, in this case, the detail of the technical

illustrations and the subtopics of self sufficiency are a cue combination that result in the

implication that this book is not for the casual environmentalist. In contrast, Tara's (age 11)

preference for text that is "broken up" with images, offers at least a surface openness to different

kinds of readers. Asked for whom the book was written, she said, "Like maybe, like kids. [...]

Kids would probably, I would want kids to read this. [...] Because then we would learn more

about the environment and like, keeping the environment together, and not ruining the earth." I

asked more specifically if she thought the book itself would actually be appealing to kids she

knew, rather than the author wanting kids to read it; she was a bit more unsure about this.

Tara: Um, -- well, a few kids. [...] My little cousin would probably find this the
             teensiest bit interesting.
Interviewer: Oh really?
Tara: She'd probably just look at the pictures, though. She's, I think she's six?
             Five.

Tara didn't see this book as being "hardcore" in terms of the commitment it demanded from its readers. Her comments suggest that it was reasonable to just flip through this book for whatever a reader / viewer got out of it -- even if that reader only wanted pictures of baby farm animals.

The information and illustration page spreads are largely consistent throughout the *Self Sufficiency* book. This book is striking to look at, right after flipping through the textual *Green Guide*, but that contrast doesn't mean the layout is particularly innovative. Designer Ella appreciated the *Self Sufficiency* book's texture, although at times she did feel that the pages were a bit "busy" in terms of number of fonts used, for example. However, she did see the page spreads adhering to the invisible, underlying grid that is used in layout software to align design elements. "[...] everything is in rectangles. Everything is contained, and like when you're designing there's a grid underneath everything. And sometimes I find it's nice, it helps for interest's sake to make something dynamic is to break out of the grid sometimes." Rectangular or grid-based alignment helps to guide a designer's choices, but in Ella's interpretation, also "contains" the page, making for a predictable kind of feel. Sarah (age 11) made a small noise of pleasure when she saw the *Self Sufficiency* book, but this was right after we had been looking at a small, yellowing paperback with black-and-white photographs. I maintain that it was the contrast of the *Self Sufficiency* book, as much as the book itself, that prompted her response. Contrasting materials against one another points our attention to the most noticeable differences. Designer Ella likely had a different suite of materials in mind, as someone with a great deal of professional design experience, being specifically asked to comment on materials as a designer. With the young people I interviewed, I asked for their feedback on my chosen materials, which is quite a different question.

William (age 16), a young person with very strong interest in design, attributed the consistency of the *Self Sufficiency* book to the "brand" of the publisher, Dorling-Kindersley (DK). He agreed with designer Ella's assertion that layout consistency wasn't a dynamic, or innovative approach to the book. However, he thought consistency made for recognizability, creating a surface credibility [citation] for the text.

> William: I do like here how they have, each page has a pretty similar kind of layout? And that's part of, uh, having kind of a consistent image, is having a consistent layout, and having a consistent image is important to me, for a book or a series of images. [...] I think the fact that it's generic might actually be a good thing in some ways. Because the DK kind of image is very generic? But that's also their brand, it's like the are – they are THE informational book manufacturer. So their informational books just look like informational books.
>
> Interviewer: They set a template, kind of? Is what you're saying? Or…
>
> William: Yeah, sort of. [...] Well, they don't try to do anything particularly new or outside of the box, because their brand is inside the box?

The Role of Contrast in Readers' Interpretations

Contrast is used in design in order to direct attention, as it brings out characteristics of the contrasting elements. Contrast can be jarring or gentle on the eyes, but regardless, allows a viewer to see "contours, depth, and shape" (O'Connor); it defines the boundaries or edges of a type of visual "object" (Shang). It can be noted in the areas of colour, movement, or light/dark design choices. It could be suggested that multiple aspects of contrast in a compact or small piece of design (such as a logo) could ostensibly be confusing to a viewer. Designer Miranda, who spoke at length about the importance of colour in design, also talked about the times at which adding colour as a design element might make it more difficult for a client to decide upon a logo's effectiveness: "There's been times where we have presented in colour and we always end up sticking back to doing the black-and-white thing because it's just like, eliminates an

unnecessary problem in the process." Miranda's design process suggests an interesting question: at what point in a design project are the number of contrasting visual elements to "notice" too many? To what extent does this depend on the scale of the project, or the chronology of the project (for example, viewing a video or website over a period of time as opposed to an image in a single sitting)?

Certainly, some of my interviewees spoke about contrast as an element of capturing and keeping young people's attention. Designer Ella named this the "texture" of a design that seemed to suggest handholds, or places to enter into the designed object's content. When designer Henry looked at the *Green Guide*, he felt so strongly about his *lack of* interest in the book that he interrupted his own explanation about what he didn't like: "There's nothing in there, like – I don't even want to look at this." Henry contrasted this book with a magazine piece about recycling in the youth magazine at which he worked. "And we did it from a – it's more colourful, and again with the pixelization from the little hand-drawn thing, like really – whereas there's nothing really on [the *Green Guide*] like, yeah."

Designer Henry's self-professed short attention span influenced some of his desire for contrast in my information examples, to add to the visual interest for him as a viewer. Regarding *The Story of Solutions*, after about three minutes into the nine-minute video, Henry said, "I'm looking at the time, and how much longer it's got. It might get a little tiresome, by then? So you know, they might introduce a little bit of colour here and there. Kind of make it sparkle along a little bit."

Successful use of contrast can be a difficult balance to achieve. Talking about a text-only book, Steven (age 18) said he was impressed with author Thomas King's use of humour in his essays, contrasting with "very shocking accounts of history."

Some interviewees noted that textual contrast can attract their attention as well. Steven talked about different kinds of text, with respect to the *Green Guide*. One of the chapters begins with a quote by Albert Einstein: "Imagination is more important than knowledge." Steven said,

[...] this is a quote from Albert Einstein, who I don't know anything much about Albert Einstein, and I don't know how much he was into the whole green movement. [...] um, but then it just sort of provides this sort of different, like you're thinking, imagination more important than knowledge, okay. You have that in mind when you're reading about the sustainability revolution which is a different kind of context or something.

Tara (age 11) also mentioned textual contrast, citing her enjoyment of the book, *The Fault in Our Stars*. "When they're texting or something, there'll be a big space, and then a different font. And then I thought that was so cool, because that's how I would see it." Contrasting text in this example isn't likely mean to encourage thinking about how to compare the two textual styles, but is a kind of authenticity marker that reminds Tara of how she sees texting in real life.

During much of our interview, Steven (age 18) talked about contrast in particular examples of information materials. He spoke about contrast with respect to a test he completed to work temporarily for the federal government the summer between his high school graduation year and his starting at university. We were looking at the *Prehistoric Climate Change* leaf-sorting activity, and he recalled the gamification of a competence test for the job. "[...] I had to do this security uh, training and test, for starting work with the government. In the training there's all these games like this, like drag and drop. I think it's always so odd when it's obviously adult things are geared towards adults, and then there's these drag and drop games. I don't know, I think it's nice."

In my discussion with Ella, the designer who was quite considered in all her responses to my questions about her understanding of a "youth audience" for design, we talked about our distance from youth cultures, and how the social and subcultural categories that seemed clear to us at that time, were no longer clear. During my discussion with Ella, I often spoke as much as she did, and I certainly felt less like I was just inhabiting the "interviewer" role, and that in fact, we slipped back and forth between the roles of interviewer and participant.

Interviewer:	But, but I do feel like, okay, I'm really used to a certain set – I'm used to some very set roles in terms of what culture you are into, and what you like, and what you'll stand up for, and what you believe. And that's not the case anymore.
Ella:	But is it not the case, or are you just unable to recognize it? Because I think there's pretty subtle cues.
Interviewer:	That could be.
Ella:	But if you're not involved in it anymore? Then you just don't pick up on. Because [teenagers], like I hear them talking about oh they're this kind of group, or that kind of group, or whatever. And I can't see a difference. [...] I know for sure that my dad couldn't recognize the cliques that I knew existed in my school. For sure he couldn't. And I think that that's pretty standard. Like maybe for a while, the obvious ones? But I don't think they're that obvious anymore. Maybe as we get further from, it gets less obvious.

The use of humour is often predicated on the contrast of what a reader expects and a sharp turn in what an author or designer delivers. Designer Ella spoke about often trying to tell young readers, in her words, "you're in on the joke." Her professional editorial team of adults didn't always see the purpose in this approach. There is a subtlety in being in on the joke, and designing with humour is somewhat risky. Ella's satirical advertisement used the metaphor of a board of directors to help a young person make career choices; the board, pictured on the advertisement, was all Caucasian, middle-aged men. Her colleagues expressed hesitation at using this image, asking why the board representation wasn't more diverse. As she recounted this

experience, she gave her reasons for choosing the images she did: "My thinking in designing it is like, this is so far removed from their life. We wanted it as far removed as possible. And this would be something that they would have seen this kind of thing before, but it would be very most certainly not relate to it. And that was part of the joke?" Her intent was to play with the often-pedantic kinds of public service announcements aimed at teenagers, that ask youth to take control of their lives and to make their choices wisely. By satirizing this idea a little, she hoped to make the message less earnest and more interesting to young readers. However, the editorial team read the advertisement at a face value, concerned about the lack of racial and gender diversity in the image, rather than understanding Ella's message, which was, young readers are tired of messages telling them to be careful about their life choices, and so by visualizing a board of directors who do not reflect their readers, make a joke that might encourage their attention.

Another example of the riskiness of subtle humour in communications arose when I showed *The Story of Solutions* to Allan (age 11) and Devon (age 15). Although Allan thought the video was well-suited towards a younger audience, one of the video's jokes swayed it to be too young for Devon's tastes. Narrator Annie Leonard talks about sharing tools and other consumer goods as a way of "changing the game" from western society's constant pursuit of "more" production; she says, "Sharing may sound like like the theme of a Barney song, but think about it! It's a huge challenge to the old game." The animation that accompanies her voiceover follows Barney the Dinosaur, the purple tyrannosaurus rex on American public television during the 1990s. Barney emphasized love and positive emotions on his television show, and was saccharine enough to give rise to several anti-Barney cultural works, including comics and a film. In *The Story of Solutions*, Barney crossly watches a man trying to keep up with the "old game" of "more" as he runs on a treadmill. Barney picks the man up, pushes him to car-share

with another, and hugs them both to suffocation when they agree to share. But Devon didn't enjoy the satire of this recast children's story; the first thing he said when the video was done, was "That was all right, I guess. But Barney? Are you kidding me?" The joke didn't bring him in. Devon summarized this quite neatly: "Sometimes when things like this try to be a bit more fun and funny, they end up being weird, and awkward."

Contrast is also highly contextual, at the item level as much as at the design or textual element level. William (age 16) said of the *Green Guide*, "If I was judging a book by its cover, if there was a slightly more, uh, unusual one next to it, which was unusual in a good way, then I might go for that."

William spoke about the contrast he didn't like. Extremely attentive to colour, he expressed vehement distaste for some of the legend-specific colours used on the *Atlas by Collins*. "I really hate it on map apps, where they have like yellow roads [...]. It bothers me to no end when you have yellow roads in the middle of your, sort of, nice wilderness shot from above. [...] it's the jarring, it's just distracting." He repeated this criticism with the use of yellow dots for cities in the app, "because this is kind of the picture of the natural world, right? So to me, it's a work of art. I mean, when you interrupt the art of the natural world with these kind, of these big yellow dots, it's ugly." This isn't surprising, given our extensive discussions about colour throughout our entire interview, as well as William's expressed admiration for the BBC Planet Earth series.

Rules of Signification

Positive and Negative Affect

The most damning thing that young interviewees would say in my sessions would be that one of my examples was *boring*. Similarly to Elliot's (age 11) use of the word "cool," young people used the word "boring" as a kind of full stop to the further discussion in the conversation. Designer Ella found the same results in her focus groups with young people, where a design seen to be boring was given no further attention by young interviewees. Another word used like this was annoying. it could be hard to parse out exactly what was boring or annoying about particular examples. Here is Devon's (age 15) opinion on manga, illustrating this point: "I honestly dislike manga a lot. I mean there's a few that I like, but the art style, - it's not the writing or anything, it's just the way the characters are all drawn, the fact that everyone looks like a prepubescent girl. It just annoys me." Devon's taste in comics tended towards the highly detailed illustrations of Robert Crumb, and he disliked abstract (what he called "modern") art.

At the end of every session, I asked the interviewee(s) which of my examples they liked best, and which they liked least. Eleven-year-old Sarah disliked the old paperback of *The Sea Around Us*, and the *Prehistoric Climate Change* website, because they were boring to her. When I prompted her to explain further to me, she said, "I'm not sure what's boring about it."

During the focus groups that designer Ella sat in on during her time as art director for the youth magazine, she noted that the word boring was often used by the youth in the group. Young participants in her focus groups used this descriptor so frequently, that she said that she knew they liked something if they *didn't* use that word in their responses to design work. If the young people really liked the design example in front of them, they might say the word "cool." Ella

said, "the word boring and the word cool were probably opposite ends of the spectrum." But how to understand what prompts one response or the other?

Neither Alicia (age 15) nor her brother Owen (age 11) were particularly interested in the *Self Sufficiency* book, because they saw it as being directed towards "farmers," rather than towards them as adolescents living in an urban centre. Alicia guessed that many people might not be interested in that particular book, either: "Um, I think for most people they wouldn't like it because it's a really big and heavy book. And they'd think like, oh yeah that's gonna be lame and boring." Her words suggest that her perception of the book as being addressed to *not-her*, along with the amount of information implied by the book's size were the elements that add up to it being potentially "boring."

Devon (age 15) spoke about the *Prehistoric Climate Change* website, comparing it to the digitized science labs that he and his peers were required to complete in high school.

Devon:	I mean, we do do some stuff like that in science, sometimes on computers, like digitized science experiments. But those are rare and everyone hates them, so you know, they happen once every, once or twice a month, and you know, everyone really hates doing the digitized labs because they're both boring and a bit easy.
Interviewer:	Mmm. And does this fall into that category for you?
Devon:	Well, yeah. This does fall into the kind of boring bit. I mean, I honestly prefer it like, here's you know, a worksheet and, a wall of text sometimes.

Devon spoke more about what is "interesting" and what is "boring" later in our session, when I asked for whom he thought the site was developed. He thought maybe for a person as young as eight. I found this surprising, given that some of the content, such as the mathematical equations and the verbal explanations of those equations, were quite abstract and seemed much too difficult for my own understanding of an eight-year-old's capacity; indeed, several of my interviewees asked me for explanation regarding the specifics of both these parts of the site. I followed up

with a question as to whether he thought younger people than he and his brother would have the patience to work through the site.

> Devon: Well, I don't know. The science labs that we do just digitally, it's not just the paperwork that everyone hates, it's the fact that we're not actually using chemicals. Everyone loves like taking some acid and silver and pouring them together and seeing what happens. [...] you know, there's something a lot more fun about actually sitting there and doing it with chemicals. And fossils, in this case, instead of looking at a screen, like, a poorly programmed simulation.

Devon and his brother Allan were interested in creating media themselves, having posted their animated trailer to YouTube, and continuing to work on a longer version of their animation; Allan had created a video game based on the *Super Mario Brothers* prototype. Both brothers said their own media creations were not very well executed; surely they could guess at how much work would be involved to create a digital science lab simulation. Devon's father, who sat in on the interview with his sons' permission, mentioned that Devon is a serious student, who does his homework right after he returns home from school each day, and who doesn't mind dealing with a "wall of text and a worksheet." I agree with Devon's interpretation that the *Prehistoric Climate Change* video certainly has an element of "children's play" in it, thinking of the video introduction with its simple, highlighted text, and the leaf-sorting activity. At the same time, the fossil scientist spoke of the development of a formula to measure temperature change in leaf fossils, without varying his inflection or delivery, speaking in a monotone. The second interactive activity is not leaf-sorting, but placing mathematical elements in the right order, as the scientist described in the video. When Devon calls this video "a poorly programmed simulation," I interpret his words as referring to video as whole, with its incongruous elements and shifts in audience address.

He also seems to be talking about the "safety" inherent in doing a science experiment online; the screen serves to remove any risk to the person completing the experiment, as well as ensuring that a potentially valuable set of fossils themselves would not get damaged. Edward (age 13) echoed Devon's lack of interest in digital experiments. "When it comes to looking through things in experiments, I prefer more of a hands on touch and like look them over, to see. It's like, it's hard to like focus on the parts you want to." When asked about the audience for the *Prehistoric Climate Change* site, Edward said, "This could be used for teaching elementary student children. [...] But, well if I was going to do it, I would just maybe – oh, maybe I wouldn't trust them with the actual fossils, so I guess, so like, this seems like more something that you can use to teach elementary student children about global warming." He thought kids in grade five might be the target audience, because "I think I could trust grade sixes" to handle the fossils themselves. Neither of these two young people believed there was anything added to the fossil information itself by creating a digital tutorial. The *Prehistoric Climate Change* site was certainly one of the least favourite examples for many of the people I interviewed. Only Alicia (age 15) actually said this site was her favourite of my five examples. She is interested in becoming a forensic anthropologist as a career, and requested the site URL so that she could review it on her own. Almost every research participant completed the leaf-sorting activity, but indicated they wished to stop as soon as they saw the calculation of temperature. Each person did exhibit a little more focus and what seemed to be interest once the leaf activity appeared, asking my opinion on whether a leaf was smooth or toothed, verbalizing their guesses while they sorted the leaves. This shouldn't be interpreted as a technological cue which sparks actual engagement, however; when I asked Rhonda (age 17) about what wasn't interesting about the site, she said, "I don't really care about leaves." I asked her why she completed the activity in that case: "It just

told me to sort the leaves. So, uh, I was just like I'll just sort the leaves and then I started doing it, and just wanted to get the job done then. – then as soon as it asked me to calculate – I didn't really know what to do for that, so I stopped."

Considering lack of interest within the context of this research, it is relevant to discuss the session I did with Ivan (age 11). Ivan and I met at his home and conducted the session in the family's living room, with his mother working in her home office a few feet away. Ivan has an amazing amount of energy, and spoke to me in a dramatic and playful way, speaking in different voices throughout our forty-five minutes together. When his mother gave me their consent forms, he had signed his with his name, and the word YOLO (for You Only Live Once). He brought the game *Plants vs. Zombies 2*, and demonstrated it for me. Of the game, he said, "This one's my favourite because they keep adding new levels." He liked the additional powers that the new game version gave him as a player, and he also liked changing the costumes of the plant characters. As he played, he talked to the game, laughing at various plant and zombie characters, rather than describing the game to me. Occasionally, he would tell me that he found certain zombie characters "annoying," because they are difficult to beat. Collecting new characters seemed to be one of his cues of interest in games, as he talked about a second game, *Battle Cats*: "It's like the best game in the world. Because there's so much cats you can get." His attention to the games was immediate and absorbing, and difficult for me to shift; he played for nineteen minutes before I was able to prompt him to put the iPad down, and to look at the materials I had brought. And his attention was slippery on my information materials; as I asked him what he liked to read, he left the room to bring out his collection of comics (*Archie* and *Garfield*), and books (*Minecraft* manuals and *Warriors*, a sci-fi series for young readers), rather than talking about them. He told me he was interested in the environment only when he was "in the mood for

it," which he specified was when it was "the only thing around," and nothing else captured his attention.

All other young participants in my research took my instructions seriously, and seemed shy about saying that they didn't like one of my items, even with my encouragement. Ivan was the exact opposite; anything I asked him, he took as a prompt to play, speaking in silly voices or jumping on the trampoline in the living room while he answered. Ivan sang along with the *Prehistoric Climate Change* site music, and said that the leaf sorting activity was "so hard and annoying," although he did complete it. He did want to see the number of items he got correct, even though after he zoomed in and thought about the first few leaves, he just started randomly placing the images, in order to get to the end of that segment. I asked for whom he thought that site was for, and he answered, "Someone who likes looking at fossils, leaves, and math. Kind of interested in science." He thought the pictures in *The Story of Solutions* were "cool," and said he would probably go back to it. That video, he thought, was "made for all ages so they can understand."

At the same time, he was a quick reader, and it seemed that he expressed, in a way both more more distracted and more succinct, the same kinds of opinions several other young interviewees stated. He is the person I think of when I think about designer Henry's statement that young people have extremely brief attention spans; Ivan's responses were also similar to Henry's, in that both looked at one of my examples, said one or two things to summarize what they saw, and then were ready to move on. It's not possible to understand what contributes to Ivan's short attention span, while Henry says that his is a combination of predisposition and professional knowledge that cues him to a quick evaluation of whether he's interested in a media example or not; he had no desire to keep watching *The Story of Solutions*, but said he could play

with the *Atlas by Collins* "all day." Quick and decisive choices about interest in media materials

were also made by designer Miranda.

> Miranda: [...] with books especially, I feel like my professional background informs even what books I take out from the library, too. It's like, you know I put stuff on reserve at the library all the time, without really looking at it, cause I'm just like, I'm so efficient, I've got my little library card. And then I'll get them all on hold and I'll go to my hold area, and there will be six books or something, and I will not take out some because they're badly designed. And the content is still the content I'm interested in, it's just like, the book's ugly, so I don't want to spend time with the book. So I think that's, I don't know if that's kind of sad. But I think it says something about how important design is.

She said, "if you're learning about something why wouldn't you want it to be enjoyable? And

that's a more contentious point of how I would enjoy something. If there's a well designed book

on the same topic, I'd rather take the well designed book." She uses her public library system to

gather together several items that might interest her, and makes her decision at the point of

receipt. It's not a surprise that a professional might have an affectively strong response to design.

Some interviewees talked about their affective responses with respect to the way in which

environmental messages encouraged or discouraged their own desires to live in environmentally

friendly ways. Rhonda (age 17) preferred the *Green Guide*, because it seemed to give her

suggestions about helping the environment that was relevant and within her capabilities to carry

out. "I like that. I don't like looking, feeling like you can't do anything. There's something that

you can do. You can fix something." Rhonda read and/or watched every one of the examples I

showed her for a certain amount of time before she commented. She was clear that the *Self

Sufficiency* book was "hardcore," and not relevant to her because it only seemed to apply to

people living in rural areas, unlike her.

Designer Henry spoke about affect with message delivery based upon his prior experiences with the messaging he had seen from David Suzuki's public messages.

Henry:	And uh, honestly I'm not sure, David Suzuki, he annoys me. Uh, like I like what he does, I just find that he's really really annoying.
Interviewer:	Okay. Like spoken, or written, or both?
Henry:	Because, because just because NOTHING that anybody does is good enough. [...] I used to follow him on Facebook and I don't anymore because I, you know, because some measures are taken, somebody's going to be doing something, and then it's like, no, not good enough.

Here, brand works against his openness to the message, based on his frustrations, which are the opposite to what Rhonda (age 17) interpreted as the Suzuki primary message: that one could make some changes, even living a "contemporary" city lifestyle.

Steven (age 18) talked about his affective response to the aesthetic presentation of *The Story of Solutions*, saying he found "the aesthetic of this video a bit like, annoying." Talking about the *Atlas by Collins*, his affective response was based on what he perceived as the "depth" of its content.

Steven:	I feel like I'm always a bit, like, let down by these kind of things. Like, I, I like it's, it's good. But I just feel like I didn't get enough.
Interviewer:	And do you think it's because it doesn't give you enough?
Steven:	[...] When there's so many things, to like, look at? It's like, so do I investigate this more or do I go over to this one and look at it on a very basic level? And then look at that one, you know.

Affective responses are prompted not only by content and brand, but also by the functionality of the media format in which it is presented. The *Prehistoric Climate Change* website in theory could offer affordances that would allow readers to skip any aspect of the site in which they were not interested. Site designers did not apply this affordance evenly throughout the site, however, and only certain elements can be skipped (e.g., the scientist "talking head"

video), while others have to be fully completed in order to go elsewhere on the site (the leaf sorting activity). Ella expressed her frustration as a designer and as a user this during the leaf sorting. "I truly can't move on until I get it right. No, this is unacceptable. I really liked it up until that point!" After completion, we talked further about her emotional response to this barrier: "It actually kind of made me a little bit angry. It made me forget all the things that I liked earlier." Several interviewees suggested that even if they enjoyed parts of an example, that if they encountered a particularly annoying feature, that influenced their overall impression of the media example. This was evident in William's (age 16) preference for games and apps without advertising to "interrupt" his experience.

One important purpose that young people may have for looking at media is that of passing the time. This is important to consider, because attention varies from situation to situation, as well as from person to person. We can easily assume that attention is either caught by stimuli or actively given by an individual, rather than as something subtler and perhaps on a spectrum. William hints at this when he talks about what he enjoys about *Tiny Wings*: "This is a game you can come back to and play and you won't get terribly frustrated with it, you can still have a good time. You can play it without, uh, having to kind of deal with a feeling of being pushed to succeed in it? Just because it's designed in a relaxing way, right?"

William (age 16) spoke about the BBC series *Blue Planet*, documentary videos on ocean life, in much the same way. He called them "soothing," and said they made him feel good to watch them on his big-screen television. It is interesting that he chose to speak about media that gave him a feeling of soothing steadiness, rather than something that he found to be exciting, or stimulating. William approached each of my information examples from an intellectual standpoint, deconstructing the elements of design that he interpreted as meaningful for the

example as a whole. At the same time, he wasn't affectively distant due to this deconstructive

approach; here, he talks about his irritation at the narrator of *The Story of Solutions*.

> William: However, I think a lot of people are easily inflamed by rhetoric, especially
> something like this, designed to inflame their sense of injustice. And, um,
> I think this is targeting people whose sense of injustices [sic] would be
> their only driving force. Because they don't really have so much logic, to
> counteract it, right? It's almost too nuanced for me to really explain. It's
> one of those things that you can kind of feel, but it's difficult to explain
> what it is. But I do think that her tone is, it really annoys me about this
> video. I don't like that at all.

Devon (age 15) was primarily dismissive of *The Story of Solutions*. One of the reasons he

gave for his dismissal of the video was the use of the Barney character as a play on the

recommendation of sharing consumer goods.

> Devon: That was all right, I guess. A bit weird.
> Interviewer: Tell me about the weird.
> Devon: Well, I don't know. The Barney the Dinosaur thing? Honestly? [...]
> Something about what, like, in my opinion, these videos should be a bit
> more, well, I don't know. Sometimes when things like this try to be a bit
> more fun and funny, they end up being weird, and awkward.

My interpretation of Devon's distaste relates to the "childishness" of the video's joke. With

respect to Klein's reading, the "dullness" that Devon perceived was not enough to sway his

judgment of the topic as a whole. The "weirdness" of the video wasn't either, but he spoke more

about his dislike of the Barney joke than he spoke about the soundness of the ideas underneath.

Later in the interview, I asked Devon and his brother Allan (age 11) whether they liked the

animation of *The Story of Solutions*; given that the item they had shown me was their own

animation, and had a strong interest in comics, I wondered whether Solutions' simple animation

approach appealed to them or not. In Devon's own words, the trailer he and Allan created was

"bad," but he had still wanted to put it up to follow through, because he had told his friends he

would. That animation was based on his brother's drawings, made at age eight, which suggests that the brothers didn't automatically dismiss all things "childish." Devon's response to my question about *The Story of Solutions'* animation seems to support my earlier interpretation, however, that the Barney joke was too "young." He said, "I can see animation can be used for educational purposes. But for me, it's a recreational entertainment art thing. I mean, I could see, I don't know. I'm just not a very big fan of like you know, Smoky Bear, PSA type things." He saw the ways that animation could be used for education, but this was not his own personal preference, to mix "information" and "entertainment." Perhaps this returns to his criticism of the *Prehistoric Climate Change* website, where he said he'd prefer a "wall of text and a worksheet" to a digital experiment.

William (age 16) stated an overt interest in design as his reason for participating in my research. He was an interesting exception to most young interviewees, because he gave a great deal of attention in our talk to what he found useful and interesting in design work; he spoke of the "elegance" of the video game he had brought with him, for example. In several examples, he spoke of colour palettes of the items I had brought, and believed that certain design choices were "common." These statements demonstrated his taste and his responses to different design choices as filtered through his knowledge of how design works.

At the same time, many of my young interviewees spoke to the making of the items that I provided. Owen, an 11-year old whom I interviewed with his sister Alicia (age 15), spoke of the *Self Sufficiency* book and *The Story of Solutions* both as examples of works that were "well organized" and well made. Steven (age 18) questioned the inclusion of music in the *Prehistoric Climate Change* site, joking, "I never liked that, when there's music playing without your consent. [...] like, what if you wanted to be doing this while listening to Björk, or something?"

The two brothers Devon (age 15) and Allan (age 11) spoke to each other about to whom certain types of design choices were addressed. As artists themselves, their "chosen item" was a short video that Devon compiled based on comics that Allan had written and drawn when he was younger. We discussed the *Prehistoric Climate Change* website, in which there are several multimedia elements: digital animation, high-resolution imagery of fossils which are used in a fossil-sorting exercise, and video talks by a Smithsonian scientist. Devon equated the multimedia elements in the site with a younger audience. He implies that the work of this example has been put into the design, as opposed to the content, and that he doesn't require this kind of attention-getting device to be interested in the content. He further says that in his class, "everyone hates [digital science experiments]," broadening his own response to a more general statement on what students his age dislike about how they have experienced multimedia as applied to curriculum content.

The general differences between these two groups support Rabinowitz's claim that "readers from different interpretive communities--readers who are using the text for different ends--may well find different things in it, and may well call on different kinds of evidence to support their claims […]" (37). Although all people whom I interviewed read and looked at my materials for the same purpose (because they agreed to participate in a research session with me), designers drew on their own professional approach to looking to analyze the five examples I brought. Young people had no such singular starting framework, given the range of their ages, and the differing levels of interest in several aspects of our session: these aspects included their interests in the environment as a topic and their interest in the various materials as we progressed through the examples. I do not know whether people who repeatedly referred to a cue during our

sessions in general, see that cue in design, or if it was simply an accessible heuristic due to our initial discussion before reviewing my environmental collection.

One consistency I noticed with the three designers who participated in the research is that they all emphasized evaluating, rather than experiencing, the materials I had brought with me. This isn't surprising, considering that the basis of their participation was that they work professionally in the realm of design. However, it is a contrast to some of the young people whom I interviewed. Ella, a designer who had worked on a magazine for teenagers, was most detailed of the three when she talked about her responses to various aspects of colour, layout, typography, and multimedia parts of each item. When clicking through the *Prehistoric Climate Change* website, she said, "I want to read this, but I'm not going to," and continued on quickly until she came to the leaf-sorting activity of the site. Designer Henry ignored parts of the text altogether, clicking on the "skip" button until skipping was no longer an option for him (also at the leaf-sorting activity). The third designer, Miranda, skimmed the text, and noted that she hadn't realized that leaf shapes were influenced by temperature during the Paleocene-Eocene era of prehistory: "That's kind of cool." Immediately after, faced with the choosing of the digital "leaves" to sort, she asked, "Okay, mm. What do I do?" Although she did "experience" through reading the site's text, she also expressed the desire to "get on with it."

I had asked the designers to look at the five information objects I had brought, and to do a think-aloud of what they noticed, what they liked, and what they didn't like in the process. It seems obvious that they would talk about specific visual, navigational, and/or multimedia aspects of the materials. At the same time, as they undertook this process, they were parsing out aspects of the works, talking about what worked and what didn't, and skipping over sections that did not seem to be relevant to their conclusions about the works.

Designer Ella was the most detailed in her comments. She picked up the *Self Sufficiency*

book and smelled it, noting that it smelled a bit musty. She talked about the music used in the

Prehistoric Climate Change video introduction, and said that she thought it added to the site. As

she examined the Suzuki book, she called it "disappointing," saying that in a reference book of

that type, she would hope for a greater amount of "texture" and "hierarchy" throughout. These

are both terms used in design. Texture refers to a sense of depth or movement within a layout, in

which visual elements contrast against one another (Samara 17). In a textual book such as the

Suzuki, examples could be different typography or an illustration at the start of a section.

Hierarchy is colloquially called the "one-two punch" by Samara, in which a noticeable visual

element calls the attention for the reader to a point on the page, which then prompts the viewer /

reader through a logical "what to read next" decision (16). An example of hierarchy within a

book could be a callout box with "what you can do" information, or a profile of a person who

made a "green change" to her life, for example.

Of all three designers, Ella was the one who talked most about the purpose of the

information within the materials we discussed. Here, she does her think-aloud as she flips

through the *Self Sufficiency* book.

Ella:	Also these typefaces are kind of like, they're extra friendly? And yet they're, the subject matter is kind of -- [20 seconds] so it's very structured. The kind of resource book that makes sense. Like this is a book that I would sit down to look things up. Look how big this type is.
Interviewer:	Mm hmm. it is.
Ella:	It's very weird. There's like virtually no white space.
Interviewer:	Yeah, it's dense, hey?
Ella:	It's dense but it doesn't need to be that dense. This type doesn't need to be that huge. So it feels like they're just trying to fill up every page. They're nice illustrations. And I like the scale, this is an important thing, these callouts from it? Like this, why is that so huge? But it feels kind of lively, and I would – I would find this much more, I would be willing to sit down and spend some time with it. I like the size, and the weight of it.

Interviewer:	Mm hmm.
Ella:	Feels like, there's a lot of knowledge in here. And I like that there's, it's the hierarchy that I was, there's structure, but it's also the hierarchy per page so that just blocking these things out, sort of, lets me know there's a different kind of information than this information.
Interviewer:	It's, it's easy for you to know where to read.
Ella:	It's like all these wayfinding things, so I know where I am. In the book at any given time. Which was nice for a, reference book like this.

Contrast this with her short summary of the Suzuki *Green Guide*, which she called

"disappointing." She categorized the *Green Guide* as a reference book, and listed a number of

changes she would make to the previously-mentioned texture and hierarchy to help a reader

navigate through the text. Her categorization of the guide as a reference meant that she could

draw on a series of tropes that were effective for the type of reading a person might do with a

reference book; that is, not to sit and read it cover-to-cover, but to jump to the sections in which

a reader is interested, whether via table of contents or via flipping through.

Rhetoric and Perceived Credibility

Some of the young people whom I interviewed separated what they saw as the validity or

"truth" of ideas from the delivery of those ideas. One example is when Devon, prompted by my

questions about whether or not he and his brother were interested in the environment, talked

about recently going to hear a book talk by Canadian activist and writer Naomi Klein. He said, "I

thought it was definitely interesting. You know, it's common sense to fix the environment [...]."

His younger brother quickly countered this statement with, "That's not what you said when you

came back." Devon modified his evaluation of the talk, saying, "Well, I said that it did get a bit

dull, at times, but yeah, I do agree with the general message. Although at – yeah, it was a bit,

well frankly, a bit dull. The general idea was good."

Designer Miranda was highly critical of most of the information examples I had brought, but she viewed *The Story of Solutions* as an example of a well-crafted rhetorical approach to persuasive communication. The use of visual metaphor was a powerful rhetorical device, in her opinion. She said, "I liked that they were using metaphors as a way to communicate certain messages. Like the game pieces, the puzzle pieces. It made you understand there are different parts, we put them together and that we could change the direction." Miranda's point of view was echoed by brother and sister Owen (age 11) and Alicia (age 15). What was notable about the young people's discussion that follows is the way in which they foreground the making of the video; they acknowledge rhetoric as a tool and talked about how it functioned, rather than just saying whether or not they agreed with the information.

Owen:	It was well thought – a lot of thought was put into it. It was well, like, made.
Alicia:	I liked some – the cartoon? I liked that part of it – it just kind of gave you a visual aid? Instead of just listening on to her talk?
Owen:	Mmm. A lot of these videos that our teachers are showing us to like, help the world and all that, and it's like, not really help-- like changing our minds. This one is like act- this one is actually--
Alicia:	Persuasive.
Owen:	More persuasive.
Interviewer:	Ah. How come?
Owen:	Just the way they've set it up, the way they've thought it out.

Edward (age 13) also spoke about the crafting and delivery of an environmental message, noting that he prefers something a "little bit more subtle." As I've noted previously, he is a big fan of YouTube for video game reviews and other information, because of how quickly he can absorb what is being shown and spoken. He also liked the use of narrative to deliver social messages: "If I'm going to read a book with an environmental message, I – if you can kind of like sneak it in, it's like way easier for me to digest." When I asked for clarification about what

"sneaking it in" meant, he responded, "Maybe make it like a story? Like a subtle environmental message around that? And then, um, tell stuff about, like the environment? And then you will be able to teach people much more about the environment."

Steven's perspective on *The Story of Solutions* was a bit different than those of designer Miranda, Owen (11), and Alicia (15). He asked me what age group I thought *The Story of Solutions* was aimed towards, and I posed the question back to him. He guessed junior high, and explained his evaluation further. "Like, I don't mind the video so far because sometimes I'm skeptical about these videos because it dumbs down the subject matter and this one like, it is, like comparing it to a board game, but at the same time they are including sort of lots of – technical words. I guess. Like GDP." So he felt cautious about the video, although the vocabulary used in it hinted at a more reliable thought process behind, he thought. He also said, "I mean it's a very sort of simplistic – idea so far, I feel. Um, and I mean I – given the way the graphics and her sort of – I don't like her theatrics, necessarily."

> Steven: I've never really liked that whole, like, it's just one step in a greater plan kind of idea. Like maybe just because I'm impatient, but like, oh yeah, banning plastic bags you know [...] I feel like it's a bit of a copout. Or, like okay we can feel good about banning plastic bags because that's like one sort of step. But everybody knows that's just banning plastic bags isn't doing much. And maybe that's a bit also like, cynical, or not appreciating the power of the people, or whatever. I've just always found that a bit like, a bit, underwhelming that idea.

Rhonda, age seventeen, talked about the use of social media platforms as prompting specific rhetorical approaches. She cited Facebook as an example of a site people use "to just, make it seem like they're having like the best day ever." Although she spoke of "social media" as a whole as a way to present oneself, she believed that since Facebook for her was a place where she connected with people she knew in the physical world, she was more likely to observe this

on Facebook. Twitter, for her, was not as personal, because "With Twitter and Instagram, I don't know half the people, I just saw the app and followed them. Yeah, but Facebook, [...] you don't wanna make yourself look bad in front of them on Facebook, you sort of want to like just keep it real and keep it normal." Rhonda said she believed friends' "best day" posts on Facebook, in part because of the personal relationships there.

Steven (age 18) noted a rhetorical strategy used by author Thomas King in his book, *The Inconvenient Indian*, as a way of disarming an argument often posed to indigenous peoples in North America: why can't they just "get over" the past? Why do they dwell on it when it was so long ago? King speaks directly to such an argument, facetiously agreeing with it, in order to subvert it. Steven explains this approach in detail.

Steven:	Many sort of, people living in North America probably, you know, of European heritage might not completely understand the history of North America with you know just when they hear complaints about you know, residential schools [...] would just – sort of shut that completely down, saying oh we'll just forget about it, it was one hundred years ago--even though it wasn't one hundred years ago– but oh, just forget about it, we've moved on. [...] He's saying, wouldn't that be GREAT if we could forget about it? Like I wish we could forget it about it, it would be so nice.

Steven noted that his own understanding of the environment and his approach to how he wanted to talk about the environment to others had shifted greatly throughout his adolescence. As a ten-year-old, he had made a presentation on the importance of caring for the environment to his middle school. He said, "'now I'm like, [shrugs] yeah, we shouldn't have pipelines." He noted that he feels strongly about the environment as an issue, but said, "I don't feel as pressed to action necessarily." I can identify this as a rhetorical shift for him, because of the ways in which he talked about other political issues that concerned him. He wanted, as a ten-year-old, to address

causes important to him in a sincere, earnest and urgent way. He wanted to try and convince

other young people of the importance of the environment through his school presentation.

Talking to him as an eighteen-year-old, he was more interested in the complexities of the

information he encountered, regardless of his affinity for the issue at hand. He demonstrated this

interest in complexity several times, when speaking about what he found interesting about the

book *The Inconvenient Indian*, when talking about his reading regarding the Israeli-Palestinian

conflict, and when viewing several of the materials that I had brought, particularly *The Story of*

Solutions and the *Atlas by Collins*. He talks about his interest in complexity in an interesting

way, suggesting that the clarity with which *The Story of Solutions* is proposing a solution is too

simple.

Interviewer:	So you said you had a couple of things. And one was sort of this idea of kind of disliking the way they're proposing a solution.
Steven:	Yeah. And the other thing was like that other idea in mind of the knowledge as a target. Um, I, I sort of feel like that is what – these videos try to do. Like try to create a target. Yeah, so then you can sort of, and then after this video you can go out there and take your bow and arrow and shoot the target.

It is interesting that *Solutions* contrasts the quick visual jokes featured in the animation with an

extremely earnest voiceover. Steven didn't comment on any of the jokes, but focused instead on

the sincerity of the narrator, whether he was critiquing Annie Leonard's delivery, or actually

questioning the organization's reason for creating the video at all.

Steven:	I question their – intent? Or like, why did they do this? What did they actually believe that this was going to create this change, this momentum? Or did they do it to do it? Ah, like.
Interviewer:	Right. Like is it about them being an organization…
Steven:	And almost a bit of celebrity or--but that seems ridiculous.
Interviewer:	Well, I don't know. To some extent Suzuki, he's a scientist, but he's a famous scientist.

Steven: Yeah. Um, I feel like in this in 2013, like it is, -- like was it made to get shares, or to get views?

What prompts Steven's questioning? Does he question *The Story of Solutions* because of his irritation in the moment with the video's rhetorical stance? Does it touch too closely on his own memories of his younger self who believed urgently in the need for saving the environment? Is it another example of the critical thinking approach that he had expressed when he talked about other political issues? It isn't possible to parse this out, and in fact, I suspect that he articulated his position as a result of all these factors, within the flow of our session conversation.

William (age 16) spoke extensively about his irritation with rhetorical delivery given by *The Story of Solutions*, and this, in turn, supported his disbelief in the video's message. "Like, if you're saying something fairly general, which most people would support, then you can make a fairly general argument. But if you're going to make an accusation, then for me, you have to back up the accusation otherwise I won't believe it." Narrator Annie Leonard's tone of voice was one such irritant to William: "See, the thing is that she talks with a very specific cadence. She talks in an authoritative way, not a questioning way. And uh, to me [...] when someone talks in an authoritative way, positioning themselves as an expert, once again, they have to back it up with something, and she's not backing it up with anything." William brought up the example of Martin Luther King Jr.'s Birmingham jail letters as a situation in which he believed the author's rhetoric, because he felt King "would speak in a way uh, which sounds more like he's talking with someone, as opposed to talking to someone." William emphasized the "respectful" way he heard King's text, as he if were talking to "family or friends." William was sensitive to what he perceived as a condescending tone, as he perceived in Leonard's narration. Like Steven, William also wanted to hear an argument that was persuasive not because it employs only information

that supports the argument, because it acknowledges the "other side" of the argument as well: "A presentation that I would trust would say, for example, like, industrial agriculture is destroying huge ecosystems, but has the potential to feed billions of people. Whereas, the presentation that I would not trust would be one that just said, industrial agriculture destroys huge ecosystems, right? Like you need to present both sides of the argument in order to be trustworthy." Interestingly, he related this language-based approach to rhetoric to design as well, saying "I think that does actually relate to design, because you have to show it immediately and at the same time. Otherwise I don't trust you."

Rules of Configuration

Rules of configuration refer to the ways in which a reader can identify certain patterns or clusters of literary features identified and categorized according to the previous processes undertaken by the reader via rules of notice and signification.

Meaning Across a Collection

A clear limitation of my research sessions with young participants and designers, with respect to rules of configuration, is that often, the interviewee did not "read" the "whole work" that I set in front of them. As we moved through my five information material examples, as well as spending some time discussing the interviewees' own chosen materials, a combination of energy level, attention span, and my own interest in working through all of my examples all meant that there was not adequate time to work with the materials to the end of each. I found one consistent exception: several interviewees were interested in watching the complete video of *The*

Story of Solutions. If a reader doesn't read a work in its entirety, then at most, a reader could only start to view the patterns of textual or design features in the work.

However, I did observe a kind of patterning across all the materials we covered in our sessions. That is, the aspects of design and/or content that each interviewee particularly liked in her or his own chosen examples were aspects of design and/or content she or he mentioned while looking at my materials. As we moved through our sessions, and discussed the information items I selected, I noticed that the comments of each individual, whether young person or designer, echoed some of the comments that person had made about her/his own object with which we had started the session. As designer Miranda looked at each of the items that I had brought, she referenced the suitability of the colour palette used; while the Suzuki book has an appropriately "earthy" cover, Miranda said the *Prehistoric Climate Change* website was dated in its use of maroon and pink, rather than showing a fresher palette. Her overall impression of the *Self Sufficiency* book was one of information overload, and a crowded layout on every page, and she suggested that colour in this case could be used not just to communicate, but as an organizing tool for a reader, "to differentiate [...] sections." Her talk about use of colour ceased after the first three items, and her attention turned towards the illustration style of *The Story of Solutions*, which she felt was somewhat dated. She did not mention design at all with the app, but talked instead about her view of the limited functionality of the atlas. For the Atlas, colour and design was not a talking point at all.

Eleven-year-old Elliot plays *Pokémon* as his favourite video game. He's not extremely interested in school subjects, other than physical education. As we talked about what he liked about the game, he noted that he liked to collect different *Pokémon*, and that he loved the evolution part of the game, where *Pokémon* became "stronger and cooler." He also likes to watch

the cartoon, although he says the 1990s series was better than the more recent series, because "it used to be funny, but not anymore." As he demonstrated how to play the game, we both laughed over particularly funny-looking characters. He also spoke briefly about enjoying the Lemony Snickett books, in which he described the good costumes that Count Olaf, the evil adult, wore to trick the young protagonists. He mentioned that he liked *Diary of a Wimpy Kid*. Elliot (age 11) showed little interest in the two books that I had brought, and didn't say very much about them. Looking at the *Green Guide*, I asked Elliot for whom he thought this book might have been written. He replied, "Maybe my music teacher." I asked how Elliot knew this, and he said, "Because he is always talking about how much he is helping the environment by taking the bus and by not taking his car." Elliot's music teacher became a running joke throughout our session. Talking about the audience for the *Self Sufficiency* book, Elliot said, with a little smile on his face, "my music teacher," and repeated this when we talked about the *Atlas*. Elliot took the chance to make a small joke when he could, and seemed bored at other times. He also smiled at the fast-paced satirical animation of *The Story of Solutions*, particularly the Barney scene.

I do not mean to use these two examples to suggest that there is a linear path from the characteristics of a chosen object to the characteristics noticed by interviewees in my small collection of materials. Rather, these examples point to Rabinowitz's work on narrative conventions, for an investigation of how information design may use some of the same rules.

Steven's (age 18) discussion seemed circuitous. He had brought the text, *The Inconvenient Indian: A Curious Account of Native People in North America*, and discussed his own interest in political non-fiction. His interest in the environment had shifted over his adolescence, from being a sort of catalyst for activism when he was in grade five, to being one issue among several that he cared about. He summarized this shift: "In grade six, or grade five, I

made a PowerPoint with my elementary school, about the environment, and now I'm like,

[shrugs] yeah, we shouldn't have pipelines." But for Steven, it wasn't just that because his own

attitude had changed towards environmental activism that his interest in this book was less.

Interestingly, he enjoyed cooking, and joked about his family's discussions of how everyday life

might change in the face of oil shortage. "[...] I remember like, my auntie [...] had like a box of

things for after the apocalypse, and she had like, pieces of gold and silver to shave off as

currency. [...] So I had a 'no hope left' chest. But um, I made it when I was like 12." He said he

might be interested in such a book in another "10 or 20 years."

Steven:	It's just like, I'm not a huge fan of like these. [indicates garden map on page spread]
Interviewer:	Those map kind of things?
Steven:	Which is odd, because like I love maps.
Interviewer:	Yeah, that's true, hey?
Steven:	But this – like it's – like it doesn't surprise me that I associate these things with those kind of books from this publisher that I read when I was 10, maybe.
Interviewer:	Mmm. Similar sorts of images?
Steven:	And it's like, some of it is just sort of like overwhelming, cause like oh, wow, is this like, how you'd be self sufficient? This seems like a lot of work.
Interviewer:	It really is. [laughs] Self sufficiency is a lot of work. I think that is well put on your part. [both laugh] Yes, I agree. Yes, I mean, that's a lot going on.
Steven:	Yeah. And I mean as much as it seems like great to be like, self – see, okay! Self sufficiency versus sustainability. Because I think like I can be down with sustainability. Or maybe that's just a safer word than self sufficiency. You can be sustainable while living a normal lifestyle.

Rules of Coherence

As noted previously, Rabinowitz's rules of coherence help a reader to create a whole

from all of the content she reads in the text, helping her to "read a text in such a way that it

becomes the best text possible" (45). She can then give names to the "textual disjunctures, permitting [her] to repair apparent inconsistencies by transforming them into metaphors, subtleties, and ironies" (45). These rules allow a reader to make a greater sense of how the work comes together as a whole.

Who is This Text For?

I saw greater variation in the responses that the twelve young people gave, in comparison to the responses between the three designers. Overall, the young interviewees spoke about the content more than they spoke about the design choices made with each information object I had brought. While one or two young people talked specifically about design as they believed it "worked" or did not "work", most expressed interest in the message of the individual information material, rather than an analysis of whether or not the example worked. Young people expressed their interest in the message of the information material subtly, rather than articulating their interest verbally, through the action of continued engagement with particular texts. I saw this most distinctly with *The Story of Solutions*, the online video that talked about alternatives to conspicuous consumption. An example of this was with Elliot, the 11-year-old *Pokémon* enthusiast. His sly humour came through in many of his responses to the first three materials I showed him. After Elliot watched *The Story of Solutions*, however, I noticed a certain softening in his voice when he talked about the animated characters he thought were funny. From this point in our discussion, Elliot's talk opened, rather than closed our focus on this example. He asked, "What is this website? Just about only stuff?" After I read aloud the "About" section on the site (which itself was a long paragraph about the achievements of the *Story* team), Elliot said, "It's kind of scary if you think of it. Cause there's a lot of like, pollution and stuff." He continued

to answer my pursuant questions in a way that appeared more engaged than he had been with previous materials.

> Interviewer: Yeah. Do you think it's made for someone like you? Like, someone your age, someone -
> Elliot: No.
> Interviewer: No? Who do you think it's for?
> Elliot: Like, maybe – actually I think it – kids – can know about it so they when they grow up and when they get older they could start thinking about decisions they make.
> Interviewer: Right, right. Yeah.
> Elliot: In San Francisco they banned plastic bags.

Here, Elliot gives thought to the implied audience for the video, at first saying it's not for someone his age, but then changing his response. He also connects the video to a piece of information he knew about San Francisco, a city he had visited with his parents the year before. Rather than closing the conversation with a stock, jokey response, he talked about his own thoughts of the information the video presented. This coincided with his perception that the video was funny, when it made a joke about consumers sharing resources as if they were in a Barney episode.

It didn't take very long for any interviewee to determine the audience for whom they thought the works I brought were created. Several young people talked about the immediate recognition that a material wasn't relevant to their own lives, particularly with the *Self Sufficiency* book. During the session with the two brothers, Devon (age 15) and Allan (age 11), Devon made it clear that the book was "good if you're the kind of person who does that kind of stuff." Both said that since they live in an apartment in a city, that this wasn't likely relevant to them. Designating the book in the "not relevant" category didn't mean that they didn't have some interest. When I asked if any aspect of the book appealed to them, Devon said, "[...] I do

like the idea of [...] generating electricity by yourself and building your own stuff." Edward's

comments echoed those of Devon. Edward (age 13) said, "Just taking a look at this, um, this

seems uh, -- this seems, this book, [...] if I were to describe the audience, [...] um, children in a –

you know, in an urbanized area, [...] this is not the book for them." Due to phrases written on the

book's cover, such as "build an earth oven," meant that "this seems more for you know, much

more for you know, farmers living on the countryside".

Absolute- and Good-Enough Credibility

Satisficing is often discussed in the library literature with a tone of frustration, and is in

fact often categorized under the concept of "information pathologies" (Bawden and Robinson).

The concept comes from early work of Simon, which he also called "bounded rationality."

Satisficing is a combination of the two words "sufficing" and "satisfying," and is based upon the

assumption that human decision-making is not about maximising personal benefit within a

complex decision-making context, but most often about making a choice that is "good enough"

for the purpose at hand (Simon 295).

Credibility, as defined in the seminal work of Janis et al., encompasses trust, and a

characteristic of trust is that it is highly subjective, and "directly related to and affected by

individual differences and situational factors" (Ye and Emurian). In this research, the situational

factors for most interviewees were a limited period of time to focus on a series of materials, as

well as a situation in which I was directing interviewees' attention to materials, and asking for

commentary. Although I told each interviewee that they should only look at any of my materials

as long as they were interested in doing so, and repeated this during the sessions, each young

person gave the materials attention based on my request. That is, the young people were not

searching on the open Internet for potential information in a naturalistic way, but were guided to pay attention to five works that I had brought. Taking Simon's theory of bounded rationality, I could say that with my chosen collection, perhaps there was an influence of "bounded credibility," in which I think that the young people agreed that the information in the works were "credible enough."

The commonality that all my materials possessed was, beyond the idea that they were all to some extent about an aspect of "the environment," was that I chose them for young people and designers to review. I could not say that I myself have boundless confidence in the authoritativeness of the materials, as I know little about leaf fossils, constructing a solar panel system for the home, or the statistics that underlie the smooth graphics of the *Atlas by Collins*. Beyond sharing commonality within the loose subject area of "the environment," the format and presentation of each item exhibited multiple differences from one another, with multiple characteristics in each one that could be interpreted as contributing to a reader's perception of credibility. These multiple characteristics could, if considered individually, overwhelm a reader with their sheer number. The presentation of information can be an aspect of information overload.

> Increasing diversity of information can also lead to overload, partly by virtue of a consequent increase in the volume of information on a given topic, which may come from varying perspectives, but also because of an intellectual difficulty in fitting it within a cognitive framework appropriate for the use and the user. Diversity may occur both in the nature of the information itself, and in the format in which it appears [...]. (Bawden and Robinson 184).

Bawden and Robinson's summary echoes the work of Simon, underscoring that individuals are

not likely to parse out and assess all individual elements of information design and format. The

limitations of time and cognitive processing capacity alone mean that bounded rationalism is

applicable to how individuals assess information, with aesthetics playing some kind of attention-

guiding role. Agosto notes,

> Human decision making, regardless of context, must occur within the constraints
>
> of the human body. Human beings are not merely cognitive beings functioning
>
> under time limitations, but also physical beings functioning under the limitations
>
> of their physicality. The cognitive– physical duality of the human condition is
>
> unbreakable (25).

Agosto wrote this in relation to young people's physical limitations in online searching; her

young interviewees stated that once they start to feel tired, or a develop sore mousing arm, they

are likely to cease looking for information online. The physical fatigue becomes one of the

"binding" influences on the young people's decision-making. However, for the purposes of my

research, it is useful to consider physicality in terms of what catches a young reader's scanning

eye, whether sound makes that reader close the window out of annoyance or listen further, and

whether that reader prefers the weight of a book or an iPad on her or his lap. The diversity of

information may contribute to overload, but it also makes room for individual preference, and for

articulation of what a reader likes or does not like, aesthetically.

Understanding what prompts a young person's trust of information is not

straightforward. My sessions with young people each lasted from 60 to 90 minutes, during which

we discussed at least six different materials (including the examples brought by each

interviewee). I could not determine in these sessions how a piece of information might change a

young person's perspective on an issue regarding the environment. I focused instead on the cues

that young people interpreted as signals of trust. When I asked young participants if they

believed the information that my example presented to them, they tended to say yes, without

apparent interest in discussing the issue in greater detail. The most illuminating points at which

trust became a point of discussion tended to be when I was not asking directly; rather, that young

people brought up an aspect of an information example that didn't cohere with their own ideas of

what was "true." One example can be seen in this excerpt from the interview with the two

brothers Devon (age 15) and Allan (age 11) and I were looking at pictures and information about

keeping backyard chickens in the *Self Sufficiency* book.

Allan:	Uh, in Tokyo they uh, instead of grass mowers they started using sheep
Interviewer:	Oh!
Devon:	Really?
Allan:	Apparently.
Interviewer:	To keep the--
Devon:	Where'd you hear that?
Allan:	Uh, it's on some commercial. It's – and like, they're, it's like promoting like, this company where you put in your ideas for city functioning and they try to put it into effect.
Interviewer:	So they just wander from house to house, or someone herds them from house to house? How does that work?
Allan:	Um, from what I saw on the commercial, all they, all you all they do is um, graze on fields near cities.
Interviewer:	Ah, okay, okay. Wow.
Devon:	Just like sheep normally do.
Interviewer:	[laughs] I have a, yeah. I have a, you know, I have heard that some people in towns use goats. And are starting to think about stuff like that. Like, how do they sustain the animals. In their home, in their area.
Devon:	I guess.

Throughout our session, these two brothers bantered back and forth, with Allan, the younger,

often bursting into our discussion with a statement, and Devon challenging him on his statement

or correcting Allan on a detail. This can be a benefit of working with pairs of young people who

know each other well, in that their conversations can shift away from an interviewer's set of questions to a more natural kind of debate they might have between themselves. Allan's attempts to "infiltrate" his brother's commentary and stories resulted in several instances where he would try to "top" the conversation by telling funny anecdotes, with some over-the-top language. In this example, Devon said he thought the Suzuki book didn't seem "overly preachy," a characteristic he appreciated. I asked the boys for examples of what environmental works they knew, which they remembered as being preachy; Devon named two animated movies: *Avatar* and the CGI film of *The Lorax,* and Allan mentioned *Fern Gully: The Last Rainforest*.

Allan:	I just thought of another movie.
Devon:	What?
Allan:	Uh, *Birdemic: Shock and Terror*. It had like a very preachy environmental message that didn't make any sense because of the context it was put in was completely stupid.
Devon:	Oh, okay.
Allan:	And they're saying that if you cut down trees, then the birds will go crazy and explode into acid.

Allan was both on- and off-topic here. He was answering a question I'd posed, but answering it in a way that was funny, silly, and focused attention on him, prompting Devon to respond, "Oh, it's a bad movie, you know? It was made on a budget of a shoestring and a tin can. I wouldn't say that they had like, you know, the means to make a good movie." Just a few minutes before, Devon suggested that big-budget Hollywood movies (such as *Avatar*) were not to be trusted: "a lot of Hollywood blockbusters are quite simplified, you know?" Other points in our session together didn't suggest that Devon doesn't trust movies at all as a format; rather, that these brothers' conversation was as much focused on refuting or topping the other's statements as answering my questions posed. They answered my questions honestly, but often swung the talk into the space of their brother relationship and accustomed manner of interaction.

The example of Devon and Allan's session seems to say something about credibility and trust in terms of contrast. The brothers' banter often involved a mutual challenge of one another. I suspect Allan may have spoken more about his anecdote regarding urban goats as lawnmowers in Tokyo because he was challenged by his brother. The brothers negotiated credibility and "truth" through their arguments. In this session, they were considering the information in my materials and contrasting it with what they knew beforehand about the same issue; but they were also looking to each other to spur debate on truthfulness. Not every one of their debates had to do with the information I had brought with me; it was apparent that one would jump onto a point to argue, and this was what they were listening for from each other in conversation: space to argue with the other.

Designer Miranda, after watching *The Story of Solutions* video, had some hesitations about whether information with a clear political agenda was suitable for children. She didn't specify what exactly what age group she meant by "children," although she did think the video "would definitely work for teenagers. [...] if they were trying to understand how economics work. I mean it's obviously a skewed, or a, a, an organization that has an agenda, you know." Interestingly, her hesitation in offering this kind of work to children related to her acknowledgment of the power of a mediator (parents or teachers) in a young person's life: "I mean I think it's a great agenda, but some people might not get behind it because you can tell right away that the content of it isn't um, just presenting information, [...] it's presenting information with a loaded opinion. [...] as far as education with kids, I don't know." She believed the information presented by the video was credible enough to help teenagers understand "how economics work," but the presentation was too confrontational or agitating for mediators for young people.

Her statement suggests that there are information materials created for young people without bias or agenda, which is an impossibility. As long as people are synthesizing and organizing content textually and visually, people are making choices as to what will be included and excluded, and to which readers' attention we launch Drucker's missives. However, *The Story of Solutions* foregrounds several aesthetic choices which may make it easier to name the video's information as biased. Narrator Annie Leonard's tone of voice is theatrical, her statements directive, and her scripted vocabulary superlative; in one excerpt, she talks about "the scourge of plastic packaging, that everybody knows is disaster for the planet, especially the oceans." William (age 16) said, "the thing is that she talks with a very specific cadence, [...] she talks in an authoritative way, not a questioning way." His observation immediately put him on alert to look for proof of Leonard's scripted statements, which he didn't see in the video. (The Story of Stuff website includes transcripts of their videos, which do include citations for their statements; see http://bit.ly/1xciNvA. We didn't look at these transcripts in the research sessions). For William, Leonard's tone is a cue to disregard the video as a whole.

Most of the young people who viewed this video found it to be one of the most engaging examples in my environmental materials collection. Elliot (age 11), who consistently made jokes about my materials being best suited for his environmentalist music teacher, watched the whole *Story of Solutions* video and talked about kids being able to make good environmental decisions, as well as the banning of plastic bags in San Francisco. Edward (age 13) thought the proposed "solutions" "could actually work."

Some discussion should be given to the influence of a reader's investment in the credibility of information. When a reader feels personally invested in the information she or he is reading, that reader is more likely to be spurred to investigate whether or not that information

can be said to be true. Sarah (age 11) demonstrated this when she was showing me her favourite

app, Instagram. She liked looking at pictures of food, sharing photos with her friends, and

following certain celebrities. I asked if there was anything about the app that she didn't like.

Sarah:	Yes. Um, there's like celebrities that have it? And people try to be them? So, and...
Interviewer:	Oh? And they try to look like a celebrity?
Sarah:	Well, yeah. Kind of. So like, let's say. Like, Selena. Like, Selena Gomez? She has an account? [...] But people, make an account and they're like "Hi, I'm the real Selena Gomez." But they're actually not.
Interviewer:	[...] Are they trying to, like, play jokes by doing that? Or sort of like...?
Sarah:	Well, they're just trying to get attention. [...] it kind of annoys me because I'm always trying to find the real Selena, but then I always find fake accounts, and then I figure out that I'm not actually following the real.
Interviewer:	Oh, that's interesting. How is that that you know?
Sarah:	Well, because there's like one real account, and then...there's other ones, and they're, they don't have like, proper pictures. [...] Like I see pictures that they post from like, um, like Google Images or something.

Sarah is interested in finding out more about one of her favourite celebrities, so continues

to search for Selena Gomez on the app, and has by necessity, learned how to spot fake accounts.

She recognizes a fake account by the images, which she can find on Google image search. This

is likely not simply a matter of trolling through Google images, but incorporates some kind of

recognition of image style, what Sarah calls "proper pictures." Among the app's affordances are

many filter options to change the light quality of photos, for example. Too many images that

appear to be staged photo shoots, rather than on-the-fly snapshots may alert Sarah to the fact that

she's not looking at the real Selena's account. It is interesting that it doesn't seem to matter to

Sarah that even if the account is fake, the images of Gomez are indeed "proper pictures;" she

wants to see the real account that the real Selena (or more likely, Selena's publicity agent)

manages. Credibility here is in the source of the images. If the account is fake, it is simply

recycling image content that can easily be found elsewhere, according to Sarah. She wants to see something more authentically of the artist she likes. In our conversation, Sarah has also identified one of the most in-demand commodities of an information-saturated world: attention. She believes the creators of the fake accounts get their gratification from having a greater number of followers' attention; for a middle-aged researcher, it seems like a lot of work to put into the app for an intangible return. As Steven (age 18) noted, "My mother always makes fun of me because I'll be talking about like a local band, and I'll be like, oh they have 500 likes on Facebook, it's so good. And she's like, what does it actually mean?" Regardless of whether or not adults fully understand the individual cues interpreted by young people on social media information sources, Sarah is certainly inspecting and interpreting certain cues to meet the goals she has for her Instagram use.

Another anecdote in which trustworthiness came up in terms of social media was in my interview with Rhonda (age 17). She talked about Facebook and the positive status updates she frequently saw others post. "I think a lot of people, um, use Facebook and social media sort of like to just, make it seem like they're having like the best day ever. Something like that. I think that's something that people use social media for. [...] I guess I sort of believe it. But, because I'm aware that a lot of the time, like half the time people aren't - it's just sort of like a wall they put up. I'm just sort of, sort of skeptical." For Rhonda, part of her "sort of" belief relates to the fact that most of the people she is Facebook friends with are people she knows in her life. "With Twitter and Instagram, I don't know half the people, I just saw the app and followed them. Yeah, but Facebook, – you don't wanna make yourself look bad in front of them on Facebook, you sort of want to like just keep it real and keep it normal." Her own desires to "keep it real" on Facebook prompt her to believe that others are trying to do the same on this social media

platform. She has a tendency to believe that others posting with the same communication intentions in Facebook as she is, but she is also skeptical because of the patterns of positivity she sees in their updates.

Edward uses YouTube as a reference point for information on video games. He trusted a very popular reviewer series, *Total Biscuit*, as well as one that is less popular, the *Investigamer*. He said, "Right now, in the gaming industry, there seems to be like this thing, where journalism is getting a little bit corrupt, and they're heading towards certain points of view in the media." For this reason, YouTube game reviews are his only trusted source. "I've just kind of gathered these groups. Like, of people I can rely on." Edward (age 13) finds that looking at the reviewers' faces and gestures helps him determine trustworthiness. "I'm just really good at reading personalities. I can kind of just draw from, it's like, I can just see, okay, which people I can trust. Like, who will deliver good information and who won't." He says that game companies pay reviewers to "make their product look good," so he wants to hear reviews from game players, not from game journalists. Edward's trust of players extends into the realm of actual gameplay as well: talking about playing *Pokémon* online, he said, "the reason I like it so much is it's very – it's a very welcoming community. It's like the people are more, you know, like trustworthy."

Steven (age 18) talked extensively about his strong interest in the historic and contemporary realities of indigenous peoples in Canada, bringing Thomas King's *The Inconvenient Indian* as his chosen item to discuss. He was concerned with understanding histories that were counter to what he saw as the dominant histories of North America, in which European settlers "conquered" this land and the people living on it. King's collection of essays challenge various stories that have been told as "truth."

Steven:	There's some town in like, Idaho I think, where there's a plaque there that sort of, uh, says oh this is in memory of the, uh, massacre of sort of settlers

by the 'savages' as they sort of made their way across the West in search of a better future. Um, but then, when you actually look into it, that never happened. That was like a completely fabricated event. But then still in 2014 there's this plaque there in this town that commemorates it and so it's this idea of like, literal writing of history.

Steven returned to this question of how much written or published documentation can be trusted as he talked about looking at different maps that depict Israeli and Palestinian lands and borders, which often ran counter to information he was reading about Middle East history and politics. He saw real political implications from these two examples, particularly the commemoration of the site where settlers were said to have been killed by indigenous peoples. "Like, oh what does it mean to write history? And you look at like oppressive regimes [...] they're writing history by not including this information in their propaganda or whatever, like that's writing history, whereas this is actually physically like creating an event that didn't happen."

Steven's talk about determining truth about historical and contemporary politics may have had some role in his critical opinions on many of the information material examples that I brought to our session. For example, as he looked at statistics presented for environmental impact of different nations in the *Atlas by Collins*, he said, "Because then also now I feel lately I feel now skeptical of these kinds of graphs because they can sort of make you feel very strong about something." When he said this, he was looking at statistics of carbon dioxide emissions by country, comparing the Netherlands and the United States, and expressed some uncertainty about the information, which stated that U.S. emissions were much higher than those of Holland. "When they're in graphs like this, it's very easy to just simplify them. It's North America that's bad. Bad-good, bad-good. [...] it doesn't take into account sort of some of like the more bigger problems, like not just that North Americans are bad people and they use lots of carbon dioxide." If I were to try and categorize Steven's political opinions based on the statements he made at the

start of our interview, where he critiqued dominant narratives of Canadian and Israeli history, I might have said that he would be eager to "blame" the United States for its carbon dioxide output. As one of the most powerful nations on earth, the U.S. is an easy target for people looking to unsettle traditional powers. In Steven's interview, it seemed more that he was interested in questioning most "facts" presented to him, talking about the complications twisted throughout environmental issues. It may have been a distancing from his younger self, who, as he recalled, made an earnest PowerPoint presentation to his elementary school on the need to save the environment. His interest in complexities of contemporary issues may also have been highlighted due to the way in which our interview started, where he talked about the need to not simply accept "truths" which he has been told as an adolescent. He hinted at this mental process, when we looked at the *Prehistoric Climate Change* website, saying, "Obviously, I don't know a lot about [the dinosaur era]. I find it's, like it's hard to make it interesting. It's like when it is interesting I feel skeptical about it." Rather than digging himself into a political position, Steven's talk was about turning a piece of information over and around, pulling in other beliefs he held, and trying to understand the complexities that surrounded that information. When Steven felt information engaged his attention, he worked that attention to try and understand whether the position of the information's author was flawed. In fact, he said, "But I think it's sort of a good point to be at, where you can have a position, but then you can read something and then automatically question the position."

Sarah (age 11) was one young participant who believed that the information contained within all my examples was true, because "I've heard them before." When I pressed her for details, she cited individual examples of facts: she had learned world population in school, and went to Drumheller for summer dinosaur camp. She was interested in learning more about

politics, she said. However, her examples were not about exact recall of fact to match

information presented in our session materials. They were more about her general thoughts that

facts she listened to in our session didn't diverge greatly from facts she had learned previously.

Sarah had some interest in learning more about environmental politics, she said, but that interest

didn't translate into in-session cognitive processing. Her stated interest in environmental politics

was not urgent enough for her to give it more than a passing level of attention in our session.

When I asked Edward (age 13) whether or not he was interested in the environment as a

topic, he said he was "pretty interested in the health and safety of the environment." He went on

to speak specifically about how he thought humans should work to ensure and enhance

environmental health and safety. He classified his approach as "the green sort of way," which

involved actions such as planting more trees to diminish the level of carbon dioxide in the

atmosphere. Edward clearly had some prior technical knowledge of environmental remediation,

which he didn't think was as effective, due to its inefficiency. He described the process of

making "carbon plastic," in which a computer manufacturer created plastic casing for their

hardware by "pulling carbon out of the air" and using it in a chemical process to develop the

plastic. However, he said, this process used one hundred times more fossil fuels to create the

plastic than it did to create plastic directly from the fossil fuels themselves. He emphasized what

he saw as the need to enhance the natural environment through plants as carbon sinks, rather than

even reducing the amount of fossil fuels used by consumers for North American lifestyles. I

asked if he felt suspicious of high technology, and he said it depended on what kind of

technology to which I was referring. He then described his belief in nuclear fission as a safe

source for energy.

> Edward: In my opinion, that could also be an extreme game changer. Um, but uh
> it's because uh the reason we don't use like, I think our only power plant is

> like in Canada, is in Ontario. [The] reason we don't use it is because of I don't know, these people that just, like just base all their skepticism on fear.
>
> Interviewer: So feeling very worried about what happens if the plant melts down. That kind of thing?
>
> Edward: Yeah. It turns – what they don't realize is um, nuclear fission, um, is just as safe as um, air travel.

Edward expressed an interesting, nuanced series of beliefs in what would work to ensure the "health and safety" of the environment. This quote from Edward further illustrates how he draws upon some technical information he knows to consider the credibility of the *Self Sufficiency* book.

> Edward: However, this book seems like it could carry a lot of information for anyone living on the countryside because it tells you how to use solar power and wind turbines. That is actually very smart. Because you have all this land, that's just begging to like, have some sort of like, something that could harness energy that could be like, wind turbines or like, solar energy. However, if we're talking about this being in Canada, and the authors seem to be living in England, solar energy doesn't seem – mm, I'd more rely on wind turbines because solar energy, in my opinion, uh, that should stay in places like Death Valley, with like twenty-four-hour sun, and an enormous plain? Like, flat terrain. That'd be perfect. Like, maybe in somewhere like California, or the States, However, in the cold winters of uh, Canada, solar, um units only have twenty percent efficiency. Um, cut that in half with the snow, that's ten percent. Cause then half again with the – how would you say that, with the nights, it's just. That's five percent efficiency.

My recording of Edward's talk above was interspersed with my own "mmm hmmms," brief verbal acknowledgements of his points. He spoke with a mix of confidence in his opinions, specificity in his calculations, and some searching for technical vocabulary. Edward expressed the most specificity and confidence in his prior knowledge of all the young people I spoke with, regardless of age. He was comfortable in making a clear judgment call on all of the information

examples that I showed him, and was invested in explaining these judgments to me. My interview with him took place right after his lunch at home, and about an hour before a friend was coming over to play Dungeons and Dragons with him; although our session was slotted into a busy weekend day, Edward gave no sign that he wanted to just push through our interview as quickly as he could. Edward seemed to be particularly self-contained and self-possessed when he was making an evaluation. Taking the *Green Guide* as an example, he looked at the book for about forty seconds, before concluding, "I feel like [this book] would have merit, because the author on the back. Um, -- I'm not um, you know, familiar with these, with most of these medals? But um, uh, -- like, I don't know, that resume for the author seems kind of legit."

He also appeared to make his credibility judgments actively, integrating what he knows with what he took from my examples. Edward (age 13) was a little different from other young participants in that I often observed that they tended to trust or distrust my examples at the overall item level, as a whole. I observed that Edward parsed out aspects of my example texts, saying that he agreed with some parts of those texts, but not others.

Interviewer:	Would you recommend [the *Self Sufficiency* book] then, to someone who was maybe looking to see – um,
Edward:	Like, trying to start a farm? Yeah. I'd totally recommend it. Uh, but anything that --- I just looked at the chapter eight with the natural remedies? I'd probably stay clear. I'm not into that type of…
Interviewer:	You don't believe in it? You feel skeptical?
Edward:	I'm very skeptical about that. I would – especially with the stuff like healing beauty, yeah. I'm not into those types of things that say if you listen to this music disc, your eyes will change colour, or stuff like that.

Whereas I believe that in other sessions, my interviewees were content to make a "satisficing" credibility judgment on the overall text, Edward was more interested in specificity: detailing the reasons behind his judgment, and articulating the exceptions to that overall judgment.

William (age 16) presented a great deal of confidence in his judgments of the information materials I had brought, as well as referring to information he had seen in other situations. William talked about the details that influence his trust down to a document's font: "I think that fonts are a really part of what makes a book feel like it does [...] Uh, I would have difficulty trusting anything informational written in, like, comic sans." He continued, "I feel that the font kind of demonstrates how seriously it's meant to be taken." He spoke very explicitly about heuristics in the presentation of information that cue his trust. "Numbers, explanations, facts, that's the number one thing that I will look at if I choose whether to, uh, find a source reliable, or not." He said that numbers within the text are also a cue to which he assigns greater credibility than simply text. Talking about the *Self Sufficiency* book, he said that it wasn't "exciting, but I would trust it. Uh, just because of once again the layout, and – because it looks like a textbook. It looks like an authority?" He repeated that the DK brand, "known for producing kind of informational books," would also support his trust. Although charts and graphs, or visual representations of numbers support his trust in information, other kinds of visual representations, such as illustrations or drawings, do not necessarily.

William thought the diagrams that illustrated the *Self Sufficiency* book were "informational, no frills added," which also seemed to be trustworthy to him, and further said, "It sort of influences my trust. That they don't try to be, uh, excessively artistic or complicated. Because when I see that in an informational book, what I tend to think is uh, that they're trying to, like conceal the fact that they don't actually have very much to say." This is an interesting distinction between graphs and drawings or illustration: I didn't ask whether William would apply the same judgments to an informational graphic that appeared to be "excessively complicated." In contrast, Steven said that all graphic representations of information made him

question the content behind the image, regardless of the style of that representation. William

talked about *The Story of Solutions* as an example of the other end of the spectrum for him. He

expressed his dislike of the video early on in his viewing, and one of his critiques was that the

simplicity of the animation was meant to keep a viewer from getting distracted. However, in the

video's case, William felt that the simplicity of the images mirrored what he saw as the

oversimplification of the complex economic system.

> William: Like um, if you were doing a presentation about agriculture, then, uh, a presentation that I would trust would say, for example, like, industrial agriculture is destroying huge ecosystems, but has the potential to feed billions of people. Whereas, the presentation that I would not trust would be one that just said, industrial agriculture destroys huge ecosystems, right? Like you need to present both sides of the argument in order to be trustworthy.
> Interviewer: Right, right, you want to see the complexity involved in every problem.
> William: And that's, I think that does actually relate to design, because you have to show it immediately and at the same time. Otherwise I don't trust you.

William (age 16) named this video's communication quite accurately as "rhetoric," and said he

thought that the video was designed to "inflame" a sense of injustice already felt by a viewer. In

this way, he suggested that the video itself may not prompt emotion, but might tap into emotions

that viewers have at the ready.

Format didn't play a major role in credibility for any of my interviewees, other than for

William (age 16), who said he trusted a print book more than online information, because he

believed it was more work to get a book to print. He knew that there were books with

untrustworthy content, but felt that a greater proportion of print books were trustworthy than

were webpages or web documents. When he used sources for his high school studies, he would

use online publications that were clearly from academic sources, as the convenience of locating

information online was important to him. Some kind of evidence of financial resources or

investment into information was also a factor in William's level of trust. When looking at the *Atlas by Collins*, I asked him if he thought the information "behind" the app and its slick graphics was true. He responded, "It's very solid. I would trust this, definitely. Cause it looks like it's professionally done."

Many of my young interviewees assigned surface credibility to particular information, based on the visual properties they noticed in the information sources. This echoes the work of Metzger, who noted that most people relied upon design and presentational elements to judge information quality (REF). Both 11-year-old Oliver and Edward (age 13) used the word "legit" to summarize their perceived truthfulness of the environmental materials.

William (age 16) explicitly said that the design quality of the *Atlas by Collins* gained his trust.

> William: It looks very professional and for that reason I would trust it. Because you can tell that money went into making that, and when money goes into making something it's usually because somebody with money has funded it. And in a situation like this, where money's funding something it's usually because they are reliable and have quality information to give.

He qualified his statements above with, "as a generalization, of course." The credibility cues for each of these young people allowed them to answer my questions to a good-enough or satisficing level.

Young interviewees talked about trusting information in social media, as well. Alicia (age 15) uses Tumblr to follow the new *Sherlock Holmes* fandom, but also has searched on that platform at least once for information relevant to a science assignment. Rhonda (age 17) also mentioned that her general, casual interest in "the environment" as a topic has been piqued by seeing friends' posts on current articles via Facebook:

Interviewer: And when you, when you come across [an article on the environment], um, in general media, or do you also see it also sort of your social network, or?

Rhonda: I see it, I see it in my social media, cause I guess another thing that people post about on Facebook is that they share links to articles, and it's actually articles about important topics. Interesting things.

Readers'/ Viewers' Frustrations

Frustrations are worth discussing under the rules of coherence, since these are the rules, as Rabinowitz notes, "[...] that deal with textual disjunctures, permitting us to repair apparent inconsistencies by transforming them into metaphors, subtleties, and ironies" (46). Rabinowitz suggests that readers "repair" textual inconsistencies in order to "read a text in such a way that it becomes the best text possible" (45). Of course, this does not mean that all textual disjunctures will be "repaired" by all readers, nor does it consider how the added activity and interpretation of seeing the information design may influence a reader's desire to encapsulate the disjunctures into an authorial whole, or to simply see those disjunctures as mistakes or stopping points.

The point of frustration, and resulting actions, for an individual reader or user can say much about their level of engagement with an informational text. If a reader notices a point of frustration, but continues to read that text, they are interested enough in the content or other aspects of the text to keep going. If a user of a website clicks on one of an array of links, and finds that it is broken, then it's clear that from her or his frustration that the user wanted to see what was beyond the link. If a user is disengaged from the beginning, it may be that she or he doesn't even express frustration, since that feeling might imply engagement.

One example from the perspective of a young creator is when Devon (age 15) talked about the "half baked" animation that he created and put up on YouTube. Throughout our interview, Devon was more critical his in responses to my information materials than was his

brother, Allan. I asked why, if he thought his work wasn't very good, did he upload it? He answered, "Well, I just wanted to say I got something done. [...] Like due to the computer crashing and all that kind of stuff, like I ended up losing all kinds of footage, so, I just wanted to be able to say to people who I said, this is going to be available." He wanted to make some progress, and to follow through what he had said he was going to do.

As we looked at the *Prehistoric Climate Change* leaf-sorting activity, Devon said, "I feel like we're doing an activity for third graders," while his brother completed the activity without comment. Designers said that this was perhaps one of the biggest mistakes to make in terms of design for young people; as Ella said, "Probably one of the biggest things to avoid, like they don't want, like anybody, they don't want to feel condescended to." She believes that in general, adults do condescend to young people in many ways, and thinks "maybe they're extra sensitive to that." William (age 16) experienced condescension in The Story of Solutions, although he explained it in terms of education, knowledge, and intelligence, not necessarily age. He spoke at length about how he saw the packaging and presentation of the topics talked down to the reader.

> William: I think this is targeting people whose sense of injustices would be their only driving force. Because they don't really have so much logic, to counteract it, right? Uh, and so I think that's what the whole format of it is for. Um, it's to put the idea out there in the simplest way possible without having to confuse their target audience with numbers, statistics, and stuff. It's like, uh, a lot of people wouldn't want to be wasting their time pushing pennies, so to speak, by having to look at all these numbers and graphs and stuff which they would find boring. And you probably find that a stereotype, but in less educated people who haven't been exposed as much to more kind of statistical evidence and explanations, right?

Watching the video made him feel irritated, as he did not place himself as this kind of implied viewer, who is willing to follow the video's rhetoric and accept the answers without more detailed evidence.

Designer Miranda expressed irritation with the *Self Sufficiency* book, saying, "I'm not really enjoying how this looks because I'm like, God, this is so busy. What am I supposed to look at first?" Two of the designers whom I interviewed tended not only to be comfortable detailing exactly what they didn't like about the materials I showed them, but also to offer specific suggestions that they thought would "fix" those materials' design. Miranda followed her criticism with, "If this was like, this type treatment stayed, and like maybe a photo, well this photo, full flood behind, and all the other stuff was taken away, then it would be lovely." The professional knowledge of these designers played a strong role in how they could talk about the texts.

Research participants expressed frustration in response to different issues they perceived. One of these issues was usability within the materials. Steven (age 18) disliked the *Green Guide's* inclusion of complex links within the print text, saying, "I'm not going to type http://oee… etc." Designer Ella felt angry with the *Prehistoric Climate Change* site, because while some of the subpages allowed a user to skip the animation on that page, for example, neither the leaf-sorting activity nor the temperature calculation allowed a user to skip. She said flatly, "Unacceptable." The frustration she experienced here wiped out all the enjoyment she had taken from the site until this point. Looking at the Atlas, Tara (age 11) said, "I don't know what to do. It looks very complicated! Um, do I tap something?" Although she was familiar with the use of a tablet computer, the app itself didn't give her enough information to tell her how to use it.

A usability point, within the context of the information itself, rather than just the technology, was the ways in which information was framed and explained. Alicia, who wants to be a forensic anthropologist, and who very much enjoyed the *Prehistoric Climate Change*

website, said that the scientific language of the site wasn't easy to grasp, in terms of how it was presented. "There's a couple things that were just like really confusing, like – well, it's nothing past our grade. But, uh, I think maybe, like I don't think some of those things like the average person would know like the AHD and all that. Right? So, um, maybe they should try simpler things with that or try to explain it, a bit better?" Some kind of reinforcement of the spoken technical terms on the site would have helped here.

Another issue where some participants experienced frustration was at points of information overload. Rhonda (age 17) expressed her irritation with the *Atlas by Collins*. "I think that its design makes it a little confusing. So much information in it, so. So much information so I feel like it would be really difficult to organize." The organization of information in this globe app also frustrated designer Miranda, who didn't see the purpose of the app as a whole.

Miranda:	I know they're trying to tell me things here, but it's not clear. You know, I'm like, there's colours, and these must be the things, so what is it. I got it. The forests. Forests destroyed. And then it's like, asking a question, so I'm like, is this answering the question? Are these the answers? I don't feel it's very intuitive.
Interviewer:	Right. Okay. Right. In terms of um, creating a path for you?
Miranda:	Or understanding what's the point. I'm already like, what is this? What am I doing? Why are we doing this?

Miranda appreciated the app's technological design, calling the mapping "quite amazing." But she didn't feel that the app gave her enough prompts to help her piece together the bits of information into a greater whole. She said, "I feel like [the Atlas is] asking me the question, and this, what I've got to do here is help figure out the answer." She didn't have any investment in figuring out the answer in this instance.

Steven also expressed a frustration about how to make sense of the information presented by the atlas app, although his irritation point came as he was considering the information more

closely than designer Miranda did. He was looking at the information of carbon dioxide emissions per capita, by country. Steven was trying to understand what conclusions he could or should draw from these figures, looking at two very different countries which had high output levels of carbon dioxide. "So are Americans bad people? [...]. And see then, so I'm surprised by like, Kazakhstan. Kazakhstan's awful people?" Steven had opened our session by discussing Thomas King's *Inconvenient Indian*, and his own wrestling with trying to understand the Israel-Palestine conflict.

Summary

My interviewees' responses to the information materials that I had brought can indeed be mapped to the four rules of reading proposed by Rabinowitz. One clear limitation is that Rabinowitz's study, *Before Reading,* focuses primarily on the reading of literary fiction, whereas my research focuses on information materials in various media. Rabinowitz's work also presumes that a reader is reading a work as a whole, while interviewees did not necessarily complete the reading or viewing of my information materials. Further, when *Before Reading* was published, the internet, e-books, and apps did not exist in the publishing world. Still, Rabinowitz's rules of reading are worth considering, if for no other reason than the fact that as new reading media become widely available, writers and publishers invariably carry over conventions into the new media. In the next chapter, I will discuss some of the interpretive themes that I have noted as a result of mapping readers' / viewers' responses to this framework of rules, and discuss these themes in greater detail.

CHAPTER SIX: DISCUSSION

Before Reading, After Multimedia

Multimedia materials require consideration of the role of the designer in the process of creation. When Rabinowitz writes, "my perspective allows us to treat the reader's attempt to read as the author intended," we need to expand our hearing of this phrase to read, "as the author and designer intended." Some works may have a great amount of designer-author collaboration evident in their final production, such as, I suspect, the *Self Sufficiency* book. I can conclude this for several reasons. First, the authors have written about ways in which they live the practice of self sufficiency, as demonstrated in their British television series. The diagrams and illustrations throughout the book work closely in concert with the explanatory text, and would therefore require some author-illustrator-designer collaboration. The well-known design format of the DK books would have given the authors a sense of how the book might look, whether or not they were ultimately consulted on the spread-by-spread layout. Other materials, such as the *Prehistoric Climate Change* website, seem to convey a less integral partnership between writer(s) and designer(s); I base this interpretation on the less-personal nature of the information that is featured by this institutional website; as well, I base my interpretation on the included information that appeared to be extraneous to the site's purpose. Finally, not all content appeared to be presented in a format best-suited to that content; one example is the video of the scientist where he speaks the mathematical formula which a user must then apply in the subsequent interactive section. Gaps like these suggest at least a limited consideration of audience on the part of the writers / designers, and certainly do not give me confidence that the people who created the site collaborated on its production.

When Rabinowitz writes that the conventions used by writers / academics that particular conventions come from "a broader social usage, one that is shared by authors as well as their readers, including their nonprofessional readers" (22), it is important to note the ways in which design comes with its own conventions that exist in social usage. To what extent are visual conventions understood by young people? Do young people understand visual conventions more or less than textual ones? How large is their visual convention lexicon? I might assume that a young person can build a visual lexicon more quickly than a textual one; with the wealth of visual media available to a person growing up in a North American society, seeing information may be more prone to heuristic judgment than reading information.

An important aspect of information design that has changed since the time of publication of *Before Reading* is that of the digital platform. An example of an informational object online can include all the previously-mentioned elements of design that fall within rules of notice, as well as adding a dimension of multimedia. A web document can have a video or game embedded within the boundaries of its textual writing, and can include links to external documents as well. Contrasts between the elements that a reader reads, looks at, interacts with, and listens to are all beginnings and endings within a single text, and serve to draw attention.

I found that most of Rabinowitz's rules of reading can be applied to reading multimedia works, based on my observations with both young people and adult designers, as well as based on my own reading of information materials. Some of the rules of reading, such as rules of notice, are so clearly aligned with information design that it seems quite obvious. Other rules, such as rules of configuration, were not such an easy fit, in part because the time which my interviewees spent with my materials was brief. It is important to remember that Rabinowitz's examples in his book came from a repertoire created through years of reading and studying

literature, as a reader and as a professor working with students. My research, conducted over approximately six months, is merely the beginning of my explorations with young and adult readers and visual and textual information materials.

Further, although rules of signification could be applied to how people looked at my information examples, there is much less work which has been written on how to pay attention to visual conventions than there has been for how to pay attention to textual conventions. Design is a relatively recent discipline of formal, explicit study. While it certainly shares some conventions with fine art, design is its own kind of communication, in its own context. Our exposure to designed information is continuous through our access to the Internet, and it is also much more randomized in terms of who sees what than it has ever been before; our individual pathways through various web sites based upon individual interests alone mean that our visual information world is much different than in the days of only television channels and print advertising. Device connection speed and operating systems affect design possibilities; my iPhone 4S does not allow me to view or use the same kinds of emoji that a friend with an iPhone 6 can, as one very small example. Many more individuals have the software to design their own works, and the means to make those works available online. There is much to study about our interpretations of design, and how images or visual effects "mean." It may be that assigning meaning to design conventions will happen in a much more individual and tacit manner than have literary conventions; it will be fascinating to study conventions of "amateur" designers as professional designers continue to develop their field.

Writer and artist David Macaulay states, "In picture making, that which is undrawn is referred to as 'negative space,' and it is essential to read both the positive and the negative spaces together to fully understand the image" (342). Samara echoes the latter part of Macaulay's

speech, in noting, "[...] graphic design is greater than just the various aspects that comprise it.

Together, they establish a totality of tangible, and intangible, experiences" (9). Both these

statements emphasize that viewers should look at a designed work as a whole, as much as they

can parse out aspects of that work. Put another way, although we can parse out aspects of a

designed work, it is from those aspects against one another that we may make a greater

interpretation from that work. This extended quote from Kress speaks to the multiplicity of ways

to represent content in our "new communicational world" (49), and the complexity inherent in

making those decisions:

> Of course, with all this go questions not only of the potentials of the resources,
>
> but also of the new possibilities of arrangements, the new grammars of
>
> multimodal texts. These new grammars, barely coming into conventionality at the
>
> moment, and certainly very little understood, have effects in two ways at least. On
>
> the one hand they order the arrangements of the elements in the ensembles; on the
>
> other hand they design the functions that the different elements are to have in the
>
> ensembles. (Kress 49)

Kress wrote this in 2004; researchers are still working to understand the "new grammars" of

multimodal texts as functional adjustments are continuously made in technology speed and in the

accessibility of multimedia software. As more individuals--beyond those with professional

design training and experience--can work with software to create and easily share multimodal

texts, the greater volume and variety there may be in the texts we can attempt to interpret. Seeing

textual elements against one another within the whole is just as important in looking, as it is in

reading, which again, speaks to Rabinowitz.

In every interview, I noticed that characteristics of the item shown to me at the beginning of our session were echoed in some way throughout the discussion during the remainder of the session. This could be because whatever the person liked most about their material tended to be what they liked of other materials; see for example, designer Miranda's discussion of colour in the materials she produced for an employee benefits program. Subsequently, Miranda talked about the potential of use of colour to organize information, to appeal to readers, and to communicate certain affective prompts: freshness, currency, or playfulness. William's (age 16) enjoyment of the "relaxing" colours, music and pace from his app *Tiny Birds*, echoed in his discussion of my materials, and how colours worked together (or more often, in his opinion, did not work together), and in his pleasure at "elegant" design of the *Atlas by Collins*.

With other interviewees, the way in which they talked about their chosen materials echoed in their talk about my information materials. Steven (age 18) talked about his interest in the complexity of political and social justice issues in *The Inconvenient Indian*. As he browsed the *Green Guide*, watched *The Story of Solutions*, and read the statistics available on the *Atlas*, I observed him to seek out complexity in the ways he engaged with these information materials. He noted that "the environment" was the first social justice issue he really cared about, when he was ten years old; his current stance on environmental conservation is less that of a passionate activist, and more of a quiet believer. Steven owns the *Green Guide*, and became a vegetarian based on the recommendations of David Suzuki, who said that reducing meat consumption can greatly reduce an individual's carbon footprint; clearly, this young person imbues Suzuki's work with a high level of trust. Still, as Steven browsed the *Green Guide*, he said that he immediately wanted to question the few graphs included in this book, since the visual display of information can oversimplify that information, in his opinion. He pursued a similar think-aloud process while

looking through the *Atlas by Collins* app, questioning why certain cities and countries had higher carbon dioxide emissions than expected, using Kazakhstan as an example. At the same time, Steven questioned what greater meaning he could derive from the statistics, asking "So are Americans bad people? For producing so much carbon dioxide [...]. And see then, so I'm surprised by like, Kazakhstan. Kazakhstan's awful people?" Steven was in a position of thinking through the complexities of any information he encountered that particular day.

Seeing The Parts and the Whole

Moore notes, "[...] what we see cannot be separated in any way from what we know" (12). Seeing is not a discrete way of thinking from the verbal or linguistic; Moore emphatically encourages design educators to "[Dispense] with the idea that we all possess 'pure' vision or perception on to which culture and experience is added as a secondary gesture [...]" (12). Moore's stance regarding the complex and integrated process of *seeing* echoes that of Rosenblatt on *reading*: "Reading, we know, is not an encapsulated skill that can be added on like a splint to an arm" ("The Literary Transaction" 273). Literacy's "bundle of meanings and implications" create an experience that is "denser and messier" (Wysocki and Johnson-Eilola 352-3).

If I am not going to be able to cleanly parse out the "bundle of meanings and implications" involved in the processes of seeing, reading, and interpretation -- that is to say, literacy practices -- why is it important to even conduct this kind of research? What is the purpose of examining how young people read and see a set of information materials? Again, the work of Moore is useful here. She denies that any kind of experience with designed material -- or material that exists in the world, for that matter -- can be experienced by one sense at a time. Although a design may emphasize particular aspects of an object, such as the tactile or the visual, it is not possible for that design to fully eclipse a person's other senses. Moore asks, "[...] is it

really possible to design for sound and touch, without considering the spatial or visual implications? Spatial dimensions, roughness, smoothness, materials, have visual, aural and tactile qualities. It is impossible to separate them" (22). That which prioritizes one type of sensory information over another may be individual attention. Ryle alluded to this when he wrote, "[...] to be observing something the observer must also at least be trying to find something out. His scrutiny is accordingly describable as careful or careless, cursory or sustained, methodical or haphazard, accurate or inaccurate, expert or amateurish" (203-4). At the same time, the contextual factors which prompt an individual's attention could likely be innumerable, and may just barely brush the actual characteristics of the information materials themselves. In my research work, the contextual factors could include how the person is feeling physically, emotionally, or mentally; how much the person cares about the subject at hand; the extent to which the person feels comfortable with me; and so on.

Lemke pushes the definition of "literacies" past the individual, saying that they must be understood "as part of the larger systems of practices that hold a society together, that make it a unit of dynamic self-organization far larger than the individual" (75). He states that these larger systems are made up of "interdependent processes" that link together, thereby creating systems in which we as readers / viewers can participate (Lemke 75). Lemke's work connects to that of Rabinowitz, who first and foremost, saw the rules of reading as "[…] the joining of a particular social/interpretive community" (22).

The question remains: where can I observe the flow between individual contexts and interdependent literacy processes? Can this be parsed out, and moreover, should it be? Young people certainly need to be able to access and understand the larger societal practices of making meaning; their years of elementary and secondary schooling are a major source of this

understanding, as are the conversations they have with parents and peers. However, I find the idea that the only role of a reader / viewer is to access those societal literacy practices, in order to deconstruct the media that is distributed to that reader / viewer to be unsatisfying. Some of the pleasure of reading and viewing must come from those idiosyncratic interpretations, as much as from recognizing conventions. Returning to Rabinowitz, the "certain initial decisions" made by a writer may indeed limit the subsequent choices with which the writer is faced. But writer to reader, or designer to viewer is not straight transmission. A creator's initial decisions in their work may limit the subsequent choices based on the shared social usage, but a creator certainly cannot anticipate all the ways in which an end user might or might not pay attention to the creator's work. As Rabinowitz himself noted, "[...] readers from different interpretive communities--readers who are using the text for different ends--may well find different things in it, and may well call on different kinds of evidence to support their claims [...] (37).

A question that I have resulting from this then, is: is it better to have a fully-realized and well thought out project in which there are fewer disruptions in the joints between text, image, and other media elements? If there are fewer disruptions, say as I see within *The Story of Solutions*, what is then interesting, is that certain aspects of the video inspired strong like and strong dislike from different interviewees. It may be that awareness of surface disruption with media is a prompt that individuals use to remain aware of the making of that material. For example, Alicia and Owen (age 11), who said of the *Prehistoric Climate Change* site, "It was well put together." Rabinowitz suggests that the "disruptions attract our notice" (65). Disruptions within individual examples of information materials may indeed encourage readers to pay greater attention, and may prompt a critical reading.

Moore suggests that seeing is as complex as Rabinowitz states reading to be, and perhaps similarly difficult to untangle our individual responses when we see.

> Developing an understanding of how our responses are affected by what we have read, seen and heard, recognising the significance of the social and political context of what we see, realizing what a landscape might symbolise or represent and being able to interpret the evidence of its history, this is visual skill. (43)

In this quote, the author mentions several different frames or facets of seeing: our previous experiences and knowledge, our understanding of contexts in which a seeable object is made and in which it exists, and aspects of creator-imbued symbolism. Is it possible for a person to only really *see* by one of these facets, or to say definitively which facet has the biggest influence on their interpretation of what she or he is seeing? It is doubtful. However, I maintain as with reading, it is useful to listen to individual people's experiences of seeing, to try and glimpse some of the ways these facets form complex relationships in a person's understanding.

It is perhaps particularly important to talk about individuality with respect to the visual, since, as Moore states, "Aesthetic discourse more than almost any other, is explicit about the dependence on the idea of universal truth" (56). There is much discourse within the discipline of visual art that insists on the "correct" interpretation of artworks; my readings of educational materials from many galleries and museums over time has demonstrated to me that they are often pedantic and directive, telling me explicitly what an artwork means. Unless written for children, such materials are often written by curators and critics, and carry a voice that is highly authoritative, with little room for a reader to move. In Moore's view, aesthetic discourse attempts to fix the "meanings" of visual elements, into "narrow, unrealistic and imaginary constraints" (12). By extension, one danger of accepting the concept of visual elements as universal in their

meanings is that this concept "...characterises the visual as an ancient more primitive mode of thinking, less sophisticated than verbal thinking, which is supposedly conceptual, intellectual and on a higher level" (Moore 21). If seeing is truly universal, then there is no thinking and no room for difference in experience, culture, and opinion. Indeed, in my casual readings of gallery educational materials, the authoritative tone often taken almost seems to transcend the idea that a person with feelings and regular experiences has written it. Moore states, "What we need is a proper consideration of vision and seeing as it is experienced in everyday life" (25). My interview sessions created a somewhat artificial "viewing situation," but they are closer to everyday life than Moore's description of the current aesthetic discourse.

Published work on the nature of categorization also discusses the idea of "the universal." Cognitive psychologist Eleanor Rosch notes, "Categorization is the area in psychology which deals with the ancient philosophical problem of universals, that is, with the fact that unique particular objects or events can be treated equivalently as members of a class" (41). Categorization also "serves to reduce the complexity of the environment" (Taylor xi). This is a clear parallel to the function of the heuristic and its cues, which can allow a viewer to quickly categorize a visual element into a personally-known category in order to process and interpret it.

The idea of universal truth may lead us, as adults, to assume that there is one way to see and understand "properly". Assumptions of universal truth are likely to lead creators of visual information materials to start their design process assuming that they can guide individuals in diverse contexts to a singular response and interpretation. There is value in the idea that different viewers will interpret different stories from different design elements within a single information object, with its layers and textures. "Dispensing with the idea that we all possess 'pure' vision or

perception on to which culture and experience is added as a secondary gesture puts the onus on us to interpret and reinterpret our responses" (Moore 12).

Moore ties how a person sees tightly to how a person knows, using the work of John Dewey to refute the idea of some kind of "purity" or "universality" within the process of seeing. "From a pragmatic perspective, asking anyone to step outside of what they know in order to understand a place as it really is, without the encumbrances of knowledge and culture, is as pointless as it is ridiculous. [...] We are what we know and we can't wipe the slate clean" (Dewey 58).

A viewer's own knowledge of the world, own experiences, and particular configuration of visual skills will all contribute to that viewer's interpretation of an object which they are seeing -- and will contribute to that viewer's interpretation of the information that she or he is reading, as well. Moore states that striving to find the "higher meaning" of a visual object is not necessarily a fruitful activity: "[...] you can look beyond what is in front of your eyes, using a lingering scrutiny and dwelling on it [...]. But to be candid, staring long and hard to find what lies beyond could be the last word in thankless tasks if you don't know what it is you're looking for" (Moore 58). Moore is saying that an individual's own contextual knowledge and visual skill are enough for that person to engage with visual content. She is also suggesting that a universal interpretation is likely not achievable for viewers -- and therefore, it is likely not achievable for writers or designers. From this, I conclude that there is value in seeing how a person interacts with visual information materials, and that there is value in understanding some of the personal factors and configurations of visual skill that a reader / viewer uses to engage with meaning. This also implies that ideas around "format" of information materials will not solve perceived problems of young people's lack of interest and/or attention to learning information. In other

words, apps or multimedia presentations will not be the key to a young person engaging with information content. As I have demonstrated in the individual sessions with young people, interesting patterns can be observed when asking those young people to talk about what they notice, and what they like and don't like, and why.

Mediators and the Guiding of Literacy

This work illustrates visual literacy as a practice, not as a "right answer." Literacy as practice connects back to Moore's talk about visual skill, and emphasizes the use of these skills. It also suggests that young people should learn how their own interests, and their own context, influence how they interpret to media. I believe it is useful for a person to understand not only mass communication persuasion techniques, but also the persuasion techniques that are more individual, and particular to her or himself. There is use in thinking about the missives that authors, designers, producers, and other creators send through their multimedia works; there is use in understanding how one is prompted to accept or dismiss those missives, and why. Mass communication via multimedia materials is certainly going to continue to be sold and made available to young people for both their academic and leisure purposes. The great wealth and diversity of media materials suggest that it isn't enough to create the "perfect transmission" of information to a young person. What are the odds that the young person will even find this material? How will that person's adult mediators encounter this material? Perhaps in previous years in the school system and in a young person's home life, there was a more centralized "pipeline" through which materials available: a limited number of books that could be purchased locally, audio-visual materials that were broadcast, and other materials available via the public or school library in the region, as well as materials found through friends. Today, the pipelines have multiplied. Local bookstores and libraries maintain websites that link to much larger catalogues

of materials than can be held in-branch or on-site. Online, one can order through Amazon, or its smaller independent competitors such as Powell's or Abe Books. One can order through iTunes. One can access tens of thousands of materials based on a Google Search. The website smithsonianeducation.org has at least one hundred interactive sites and games for young people available for free; this count of sites / games does not include the smaller number of location-specific online materials available at each of their sixteen individual institutions (Museum of the American Indian, etc.). In the local context, Alberta Education has recently made a decision to move away from providing a list of authorized curriculum resources for grades one through twelve.

Librarians certainly cannot keep up with the reviewing and recommending of materials, and it is safe to say that teachers and parents will not be able to do so either. If the idea of "literacy as practice" is more accepted as the ways in which people "read" and interpret multimedia materials, it may be that the practice is more important to emphasize than the final conclusions. A metaphor that comes to my mind is that of the process of "narrowing in" while reading, as opposed to "opening out." If reading only for the singular, authorized interpretation, I consider this to be narrowing in; looking for a tidy closure to one's reading / viewing experience and interpretation. Opening out when reading and looking is a metaphor that offers more possibility of drawing upon "the physical world about us, in all its multifaceted, cultural, social and complex sensuality, marked indelibly by memories, associations and preconceptions [...]" (Moore 65). Elster wrote about this briefly in his work with middle school children and the interpretation of poetry; his definition of "opening to the outside world" was an interpretative practice where both young people and adults in the classroom "opened the words of the poem out into the larger world by reasoning things through using personal experiences and belief" (74).

Elster springboards off the work of Faust, who in 1994 suggested that texts should be treated

"not as containers or transmitters of fixed meaning, but as 'situations' [...]" (qtd. in Elster 76).

Moore echoes this stance when discussing human responses to the aesthetic:

> As with any other kind of human experience, the aesthetic occurs in response to
>
> our interaction with the physical world about us, in all its multifaceted, cultural,
>
> social and complex sensuality, marked indelibly by memories, associations and
>
> preconceptions. [...] The response is inevitably influenced by knowledge, mood
>
> and context. This locates us, not as cool observers of a world 'out there,' but as an
>
> indispensable part of that world. (Moore 65)

Our multiliteracy practices are shifting practices, based as much on how we feel and where we

are as they are based on our "skill levels." Moore encourages viewers to "concentrate on what

we see rather than anything beyond or hidden beneath the surface" (68).

Perhaps ruptures in the surface of the presentation of information material is potentially

an aid to critical engagement. I often observed a young interviewee to be most talkative when

they found an aspect of the material they didn't like, or found to be irritating. At times, it could

be that a rupture in the smooth acceptance of the presentation incorporated the young person's

criticism of information content as well as of presentation. Take, for example, William (age 16),

who was irritated by the voice of narrator Annie Leonard in *The Story of Solutions*. I can't

definitively say whether it was the narrator's voice, or her words that first piqued William's

annoyance, although her voice was the first thing on which he commented. As he talked about

what he read as her patronizing stance, he also said that the generalizations he heard in her

statements, meant to "inflame" a viewer's sense of "injustice," were due to the fact that "Because they don't really have so much logic, to counteract it, right?"

At this point in our discussion, William specifically alluded to the difficulty of parsing out what aspects of design or presentation influenced his judgments: "It's one of those things that you can kind of feel, but it's difficult to explain what it is. But I do think that her tone is, it really annoys me about this video. I don't like that at all." Although a viewer can experience several elements of multimedia simultaneously, the viewer can only speak about one element at a time. There aren't conclusions I can make about the role of any one multimedia element over another in this example with William; I can't isolate which ones prompted his dislike of and his critical response to the work. However, I can note that the narrator's voice was the first one on which he commented; it stood out for him as an accessible point to discuss. I can also interpret that the different elements of the video about which William spoke were "a function of [his] needs, purposes and preferences" (Moore 61). As Moore notes, the visual is something to which a person responds, and each response will be spurred and sustained by something different. In the case of landscape, "Ecologists will be excited by the possibility of increasing bio-diversity, hardened urbanites by the opportunity to create vibrant urban nightscapes or dramatic urban squares" (Moore 61).

Readers and Their Prior Knowledge

This brings me to questions of prior knowledge, and what young people (as well as adults) bring to a multimodal text. Langer's work with young people making meaning through reading literary and informational texts led her to propose four recursive stances with respect to the texts they had read. These four stances are: being out and stepping into an envisionment,

being in and moving through an envisionment, stepping back and rethinking what one knows, and stepping out and objectifying the experience.

The first, being out and stepping into an envisionment, where readers "using prior knowledge, experiences, and surface features of the text to identify essential elements (e.g., genre, content, structure, language) in order to begin to construct an envisionment" (Langer 238). In the second, being in and moving through an envisionment, Langer describes readers as being "immersed" in their own sense-making, "using their previously-constructed envisionment, prior knowledge, and the text itself to further the creation of meaning" (238). In the third, readers used the envisionment of the text to reconsider the knowledge with which they came to the text. Finally, in stepping out and objectifying the experience, readers took a metacognitive approach to the texts, discussing their own reactions to the text's contents, to the text itself, or to their experience of reading that text (238). The ways in which my young interviewees engaged with their own prior knowledge touched on each of these four stances, and at times, I observed that a young person would shift from one stance into another, as they moved through my information materials.

Most of my interviewees at some point took Langer's first stance, that of being out and stepping in. This is not surprising, given that in her work, Langer notes that "being out and stepping into an envisionment occurred primarily at the beginning of a reading" (241). Langer describes this stance as a meeting between a reader's prior knowledge and the information presented by the text (whether literary or informational). She notes this stance is also particularly important for informational texts (240). Examples of this stance abound; Tara (age 11) talked about the *Self Sufficiency* book's pictures, saying that food is one of her favourite topics. Steven (age 18) talked about the influence that David Suzuki has had on him choosing to be vegetarian,

while we were looking at the *Green Guide*. Elliot (age 13) spoke extensively about his own

knowledge of fossil-fuel alternatives to produce consumer energy while he evaluated the

credibility of the authors' diagrams of wind- and solar-power generators.

I observed that interviewees tended to only occupy the second stance, being in and

moving through an envisionment, with *The Story of Solutions*. Take, for example, Elliot's (age

11) voice softening as he said this video was for kids, so they could make a difference for the

environment when they grew up. Or, his unprompted contribution of his prior knowledge, saying

that he learned that the city of San Francisco banned plastic bags through his own trip there.

Langer states that in this stance, "readers [are] caught up in the narrative of the story or were

carried along by the argument of an informative text" (238). In my information examples, *The

Story of Solutions* exhibits the most focused, singular argument in its narration, with its

animation adding a layer of narrative to the video.

I saw little evidence of interviewees occupying the third stance, stepping out and

rethinking what one knows. As I wrote previously, most of my interviewees articulated some

kind of prior knowledge to do with my information materials, and/or to do with the environment

in general. Prior knowledge could be familiarity with a particular author, as designer Henry and

Steven (age 18) had with David Suzuki; it could come from personal experience, as when Elliot

(age 11) talked about the city of San Francisco banning plastic bags. Prior knowledge could also

be familiarity with subject matter, as when Edward assessed the extent to which hydro and solar

power could work in the Canadian geographic as opposed to that of the British, as described in

the *Self Sufficiency* book. William demonstrated subject familiarity as well, but for him it was

about how design works. At no time during the interviews did I correct a person's prior

knowledge, if I thought it to be incorrect; for example, Devon had thought that David Suzuki was

involved with a cartoon that he had seen when he was younger. Later, I tried to determine on my own whether Suzuki had indeed been part of any cartoons, and could not find any mention of it. At other times, interviewees gave strong opinions that were stated as fact, as did all three designers, and as did William when he expounded upon how colours work together. This is not to say that these opinions were incorrect, but they were stated as factual without necessarily any detailed explanation from interviewees.

A number of interviewees did, however, take the fourth stance, stepping out and objectifying the experience. To some extent, this was a result of my session instructions, to conduct a think-aloud while viewing and reading the texts I provided. My questions in the sessions also encouraged a stepping out, as I asked interviewees what they noticed and liked or disliked, and why. At times, young people would express an evaluation that highlighted their awareness of the materials' construction, such as when Owen (age 12) called the *Prehistoric Climate Change* site well-put together.

Employing Heuristics as Making Meaning

All my interviewees, both young people and adults, demonstrated some kind of reliance on heuristics, which allowed them to express their affective judgments relatively quickly regarding the information materials I had brought. My interviews ranged from forty-five to one hundred and twenty minutes, which is, even at its longest, a short period of time to really assess the information each individual work contained. Most of my interviewees used language that suggested they were relying on heuristics to make a quick judgment as to whether or not they would be interested in at least some of these materials: Owen (age 11) and Alicia's (age 15) statements that the book *Self Sufficiency for the 21st Century* was for older adults because of the picture content. Devon (age 15) guessed that the *Prehistoric Climate Change* website was made

for children in grades three to five because of the inclusion of the leaf-sorting game and the animation. Heuristics are a useful concept to help identify how it is that a reader / viewer can sift through information. However, I did not observe clear category lines between heuristics for the same material; that is, rather than heuristics being a commonly-held set element of mass communication, I observed that particularly the young people used the heuristics available to them as ways of drawing boundaries around elements and/or types of materials. They named the heuristics they observed in order to answer my questions and in order to move the conversation forward. A number of interviewees may have used the word "cool" in our individual sessions, but they were not talking naming the exact same material as "cool". Naming an information material as an example of an observed heuristic categorized that material for the interviewee and for me. Lemke noted, "We make meaning by contrasting types of categories of things, events, people, and signs. [...] Within a category we can often distinguish and contrast many different subcategories, and so on to great delicacy of typological categorization and description" (80).

Heuristic naming as a means of populating design categories is a useful tool for a person to move through a new information text. As a young person builds their own knowledge and interpretive (or visual) skills, it helps that person to quickly decide whether or not to pay attention to new materials. But heuristics are not stable categories, and people may use heuristics to overgeneralize for the sake of efficiency (or for other reasons). Here I recall Elliot (age 11), who brought his *Pokémon* game to our session. The first three examples I showed him did not capture his interest. When we watched *The Story of Solutions*, Elliot appeared to be engaged for the first time with one of my information examples, watching the whole video, and volunteering some of his own knowledge about the city of San Francisco banning the plastic bag as an

environmental gesture. Two days later, when talking informally with his mother, she mentioned she had asked Elliot what the interview was like. His reply: boring.

I knew during our session that Elliot was bored by several of my materials, and I made some efforts to avoid prolonging his boredom. I asked frequently during his viewing of each example whether he wanted to continue or wanted to stop and move on, and we stopped when he said. If he brought up a personal story, whether it was related to the example at hand or not, I listened and asked a question or two. During *The Story of Solutions*, he said he wanted to keep watching, and his voice softened slightly when we discussed the purpose and the intended audience of the video; he thought the video would be useful for kids, so when they grew up they could try and make a difference. This is quite a change from his tone of voice with which he joked that other materials were aimed at his music teacher, the environmentalist. I know that Elliot demonstrated some engagement with the video. However, the single word he used to describe the session with his mother was boring.

In the same way that one example of an information work can contain various textures of text, image, interactivity, and multimedia, a reader's / viewer's experience with multimodal works can also be textured, in terms of affect. That reader / viewer may categorize her or his experience with the information work in a totalizing way, summed up in one word; however, the one-word category may encompass any number of thoughts, feelings, moments of engagement and disengagement. Elliot's summary of our session may have served the purpose of communicating that he wasn't interested in participating in such a research interview in future, or that he remembered only the boring parts, which for him were greater than the few moments of engagement.

Langer observes that reading informational texts was a process where students worked to "narrow in on increasingly more specific meaning" (250), as opposed to students "exploring a horizon of possibilities" (248) in the literary examples she included in her study. However, she notes some exceptions, stating,

> There is some evidence that although the general orientation a reader chooses toward a text is generally maintained, readers occasionally shift orientations in quest of meaning. This is particularly interesting in that texts often blend techniques (e.g., in the middle of a logical argument, the writer may provide a narrative anecdote), thus inviting readers to shift their orientations. (253)

Langer further writes, "[…] it is possible that more varied text types, longer texts, or more natural environments might provide more inviting contexts for such shifts to occur" (254). Her work was published in 1990, and texts today are wildly more varied in their presentation.

All these stances in which young people employ prior knowledge suggest, to echo Lanham, that one's own array of information is never "clean," that "Information always comes charged with emotion of some kind, full of purpose. That is why we have acquired it" (19). To extend this idea, information is also retained with emotion of some kind, for a purpose that is relevant to an individual. That is why we keep it. If it is not charged, perhaps it is not worth remembering or considering in the particular. Elliot's (age 11) summarization of our session as "boring" I interpret as a cleaning up of the textured moments of our session. I believe Elliot doesn't need to retain any further details from that session, even though that was a time that did exhibit at least some texture of affect and interpretation for him. A singular categorization of the session worked for Elliot. My interpretation of Elliot's summary beautifully mirrors Lemke's understanding of meaning-making:

> I am coming to believe that we make meaning in two fundamentally
>
> complementary ways: a) by classifying things into mutually exclusive categories,
>
> and b) by distinguishing variations of degree (rather than kind) along various
>
> continua of difference. Language operates mainly in the first way, which I call
>
> *typological*. Visual perception and spatial gesturing (drawing, dancing) operate
>
> more in the second, *topological* way. (79)

Lemke's metaphor extends what designer Ella referred to as the "texture" of the print layout, in which multimedia elements that work within and across texts to create a more spatial sense of literacy practices. It isn't that images and other media create a three-dimensional world; readers have found over centuries that text alone can accomplish the creation of immersive worlds. Rather, text, images, and other media now foreground a continuous, varied terrain that readers and viewers are feeling our way through to make meaning.

Lakoff's in-depth examination of the concept and practice of categorization claims, "In moving about the world, we automatically categorize people, animals, and physical objects, both natural and man-made" (6). He posits categorization as a basic human activity:

> Categorization is not a matter to be taken lightly. There is nothing more basic than
>
> categorization to our thought, perception, action, and speech. Every time we see
>
> something as a *kind* of thing, for example, a tree, we are categorizing. Whenever
>
> we reason about *kinds* of things--chairs, nations, illnesses, emotions, any kind of
>
> thing at all--we are employing categories. Whenever we intentionally perform any
>
> *kind* of action, say something as mundane as writing with a pencil, hammering
>
> with a hammer, or ironing clothes, are are using categories. (Lakoff 6)

He further emphasizes that categorization is tightly wound around the human act of seeing: "SEEING TYPICALLY INVOLVES CATEGORIZING" [emphasis in original] (Lakoff 126). My question to both adult and young interviewees, "For whom do you think this was created?" prompted an almost immediate response from every person. Taking what they saw of each information example, each interviewee could infer something about the work as a whole, and thereby articulate an audience persona.

Some research in psychology notes that "learner interest is likely a more important factor in a real learning environment" (Muller, Lee and Sharma 218). This seems like a straightforward finding, but there is a notable body of research in the same field that supports the theory that incongruity, or contrast, in a visual presentation, can actually support better recall for young adults (Tangen et al.). Further, interest alone does not appear to be adequate as the sole characteristic for learning; "it seems that images of any sort will capture people's interest, whether they are relevant or not. [...] interest does not necessarily translate into better learning, as interesting-but-irrelevant images can actually lead to worse performance [on post-image testing] than no images at all" (Tangen et al.).

From a review of research conducted in psychology over the last five decades, Tangen et al. suggest that contrast allows for better recall for various visual examples, including brands and advertisements, people and ethnicities (see Tangen et al. for greater detail). Processing incongruous imagery requires more effort in mental processing, and so integration of images into long-term memory requires viewers who have the capacity to make the cognitive effort to process these categories of images (Tangen et al.). Lemke takes the function of contrast even further, suggesting that it is a catalyst for our meaning-making: "We make meaning by contrasting types of categories of things, events, people, and signs. [...] Within a category we can

often distinguish and contrast many different subcategories, and so on to great delicacy of typological categorization and description (80).

What does this suggest about categorization? The young interviewee Devon (age 15) said that there were aspects of the *Self Sufficiency* book in which he was interested; however, he clarified that it was not useful *to him*, overall. His evaluation of the book could be summarized in this quote: "This looks like a practical thing for like, farmers, and people who live in the country and stuff." He would not pick it up on his own.

In his discussion of the principles that are common to systems of categorization across a number of cultures, Lakoff notes that "Categories as a whole need not be defined by common properties" (96). What does this suggest to me? It suggests that it may be possible that a reader / viewer places items that she or he is not interested in, in the category of "not for me," the only commonality of which is that this particular seer / viewer does not feel a spark of interest or intrigue in the item. Further, "not all of us categorize the same things in the same way. Our experience of seeing may depend very much on what we know about what we are looking at. And what we see is not necessarily what's there [...]" (Lakoff 129). This suggests that prior knowledge plays some role in our interest, perhaps. This may be knowledge of a subject we like, or a subject that we are not interested in. Sarah (age 11), after we had looked at some images on Instagram and some heavily-text-based information materials, made a small sigh of interest when we looked at the *Self Sufficiency* book. With the text-heavy materials, she noticed more about the imagistic aspects of those materials (for example, a black and white photograph in the Rachel Carson book) than she engaged with the text elements. In contrast, Edward (age 13), Tara (age 11), and Devon (age 15) all quickly said that the *Self Sufficiency* book was meant for a reader / viewer who was *not-them;* who wasn't a kid, who didn't live in the city, and who was willing to

put in the work to build solar panels for their homes. They were thinking and talking about the utility of particular information materials to their own lives prior and after seeing the *Self Sufficiency* example. Each of these young participants spent up to a minute reading the cover text and table of contents for both books I had brought. They weren't simply making these evaluations based on the book's size or cover. They spent time with them.

What might this mean that is of relevance to designers and to librarians, or other people who create and/or select works for young people? One thing might be: a textured work may have been created with certain elements of its design and production foregrounded, for example, the use of colour or photography on a book cover. Foregrounding may be an arrow pointing at characteristics of a publication; but the arrow doesn't necessarily hold the attention of a reader, or make a reader use that pointed-at characteristic as the primary characteristic to confirm their interest or lack of interest. Materials with multiple ways of presenting information (whether those are visual design, navigation design, or others) offer multiple points of evaluation. So the young participants who evaluated materials as being addressed to an audience of *not-them*, are not necessarily choosing just one prominent design aspect of the materials.

Classifying things into mutually exclusive categories presents a potential tradeoff when a reader / viewer uses heuristics to quickly sift through information. I have discussed the degree of texture that I found within my five information material examples. Even such a small collection of materials exhibit textures within each item, as well as in the contrast of items against one another. The tradeoff with a heuristic approach to information navigation is that a categorization can gloss over that textured surface, leaving a reader / viewer less likely to be surprised by a work. This is an interesting aspect of multimedia works: if a single work contains text, sound, images, animation, and/or other modalities, a reader / viewer is more likely to be surprised by the

surface ruptures of these elements against one another, and as they work together. As Owen (age

11) said when asked what he thought about the *Prehistoric Climate Change* website, "It's well

put together." Multiple media elements within a single work that push against one other's

boundaries can highlight that media are indeed written, designed, and produced by people, with

any number of choices involved, which result in slightly different interpretations for different

readers / viewers. Lemke suggests that the world of multimodal educational resources shift our

possibilities farther away from the universal, and more towards the particular.

> Designers would, no doubt, like universal guidelines for producing media that
>
> evoke positive affective responses, that people enjoy using. This seems unlikely,
>
> however, given: the variation in users' backgrounds (social, cultural, biographical,
>
> temperamental); the combinatorial effects of feelings regarding technologies,
>
> media, genres, content, etc.; and the effects of embedding activities and contexts
>
> (situational and temporal). Both teaching and design are ultimately arts as well as
>
> sciences; that is, they must deal with the particular as well as with the general. We
>
> can say in general what teachers and designers should pay attention to, but they
>
> must learn by experience, to the extent possible, how to respond to each unique
>
> instance (each student, each teachable moment of opportunity; each user's
>
> preferences, each larger context of use of a tool). (Lemke, "Affect, Identity and
>
> Representation")

On the other hand, it isn't realistic to suggest that readers and viewers avoid the use of

heuristics altogether; the heuristic assignation process is something we practice while barely

being aware of it. But there are educational and cultural sites where mediators of texts for young

people (and adults) can discuss and practice the slowing down of reading and viewing. Rather

than attempting to find the media solution that can serve to 'hook' the interest of young people into learning about a topic, encouraging simple discussions of what young people find appealing or unappealing and asking can be thought-provoking for adults and children alike. Media literacy can't be simply about the deconstruction of advertising messages. Rather, it should be a set of practices that consider media in a broader sense (beyond simply advertising to include anything that is created on a subject of interest), and with which a reader / viewer becomes more aware of her or his own preferences, choices, heuristic habits, and capacity to be surprised. Metacognitive awareness of one's own heuristic suite has been suggested as improving one's ability to learn and understand content (van Opstal and Daubenmire 1090). Van Opstal and Daubenmire note that although some metacognitive development is naturally learned by young people, that adolescents should continue to have it prompted and developed as they work through their high school years (1110).

Further, it is important to note that a built-up suite of heuristics is not the same as a rigid construct; Bellur and Sundar's work regarding cues which contain heuristics emphasizes that a cue embedded into a text (such as length of text, or image) does not predetermine which heuristic a user may employ. "The same cue can trigger different heuristics under different circumstances. For instance, under conditions of low-involvement, a lengthy newspaper article could trigger a "length equals strength" heuristic, whereas under conditions of high-involvement, the same lengthy article could trigger a "length equals prominence" heuristic (Bellur and Sundar 117)." The authors' examples here are somewhat clinical, in that they do not allude to the potential for a lengthy newspaper article to trigger a "length equals boring" heuristic, as I guess I would see with some of my young (and adult) interviewees.

Young readers already do employ the heuristics to decide whether text-only materials are worth their time and attention. In her work with adolescent readers, Reeves found "Books are interesting or they are not; they either grab the student's attention or they do not. [...] most students mentioned that they need to be interested right away [...]" (240). When Reeves prompted adolescent readers to speak more specifically about what they meant by the word *interesting*, "most students could not explain. 'Interestingness' is not an objectively identifiable quality, and certainly not a universally agreed-upon one [...]" (240). However, the young people, when talking about *interestingness*, "clearly located it as being 'out there" (Reeves 240).

There is value in encouraging young people (and adults) to understand where they themselves make a text interesting, that *interesting* is as much within that person as a reader as it is in the produced text. Part of this understanding is that a reader can spend some time thinking, writing, and talking about their metacognitive processing experiences when reading a text. Although Reeves' young interviewees could not say exactly what was *interesting* about a book, I believe they would be able to circle in on some vocabulary through practicing the discussion of their metacognitive activities. Readers can be prompted to reflect on the process of reading and viewing, in the name of understanding themselves as readers, and what gives them pleasure in reading and viewing. I believe that it would equally benefit readers to be able to talk about what is on the flip side of *interesting*. Elliot's (age 11) naming of my environmental collection as *boring* is a valid response; listening to young people's negative assessments of texts can give a great deal of information about their points of both engagement and disengagement; this kind of information is relevant to a reader / viewer, and it's relevant to any adult who works with readers and viewers. Lemke supports ongoing research into people's affective experiences with texts:

> To ground any helpful advice about either the general or the particular, we do need to accumulate more collective knowledge about how people feel when using various tools, media, and representations. And to do so with attention to variation across individuals, communities and cultures, genres, contents, styles, and contexts. (Affect, Identity, Representation 2010)

Working with individuals, as I have done in my research, may be critiqued for its lack of generalizability. However, Lemke maintains that there is little published enough on emotion and media, that researchers simply need to work with different types of media and different types of people, in all their complexities and contexts, to build up that "collective knowledge" and understand how we read, look, and interpret multimodal works. Lemke's recommendation goes beyond some definitions of media literacy, in which mediators (such as teachers, parents, and librarians) are to coax young people into deconstructing corporate messaging in mass media; rather, Lemke considers that people use "tools, media, and representations" in a fuller universe, with a greater range of possible affective responses.

It is not that a person's suite of heuristics is problematic *per se*; heuristic judgment serves an important function in a world where we constantly create, disseminate, and receive information in many different formats. However, I argue that it is useful for a reader to push past the cues and the heuristics those cues trigger, to more fully consider what prompts that person's positive and negative evaluations in concrete terms. There is no option for a person to read and see without aesthetic influences; even plain black text on a white sheet of paper or white screen suggests choices the text producer has made, if only by virtue of the fact that the plainness of that text contrasts with other highly-produced media that a reader has likely recently been reading or watching. What is interesting to me is that a person's interpretations will be firmly grounded in

that person, as much as grounded within the cues presented by a text; it is worth an individual

reader or viewer trying to understand some of their own contextualized interpretation. As Moore

notes, "[...] it is wrongheaded to assume that just because there are objects in the world we are

able to view them or talk about them objectively (Moore 22). I argue that readers and viewers

will benefit from understanding where their subjective interpretations interact with the cues that

a text offers--and that mediators should watch and listen these subjective interpretations closely.

Lemke suggests the need to gain a feeling *for* what we study; "the affective dimension of our

engagement with representations and representational practices seems essential to an effective

understanding of the learning process itself across its many timescales (Affect, Identity,

Representation)."

Implications

It is important for a young person to not only be aware of how something is made and

what "missives" are being launched by the creators through the media (Drucker 149). It is also

important that a young person be aware of how she is receiving it and why. Readers / viewers

can conceptualize themselves in the system of "how information works," which gives them

greater insight into themselves and into the diversity of ways in which communication can

function and can be interpreted. This, I believe, helps them build their own communication

capacity.

One practical method for practicing this kind of interpretation is to ask young people to

place themselves into the texts they are reading, and to listen to how they discuss their self-

placement. By "self-placement," I mean the process of talking about what they notice about the

text and about their own affective responses as they are reading / viewing a particular text.

Answering questions about content is one kind of interpretation; however, it strips out many

contextual and material aspects of the process of reading. There are many questions mediators could ask young people about multimodal texts. These could include whether the person likes images in a book or the animation in a video; whether they felt they could control the pace of the app or website; how they felt when they sat down to look at this text and how they felt afterwards; to whom they would recommend this text (if anyone) and why. Within a classroom, young readers / viewers could write about a media example (book, comic, app, video game, etc.) that they particularly love -- which sets some understanding for the teacher about a young person's established interests. Those young people could write and talk about other pleasure or classroom reading experiences, and compare those to the initial work about which they wrote. What do those young people and mediators notice about change over time?

The embodied and affective experiences of reading and viewing deserve to be asked. I also do not mean to suggest that there is some kind of checklist or exhaustive suite of questions that must be asked; I do not believe that this kind of reading can be encapsulated into a single classroom lesson, any more than "learning to read" can be encapsulated into a single lesson. We know that literacies are practiced throughout our lives, and my recommendation is meant to consider different ways of observing young people's practices -- as well as observing our own, as mediators.

My research also has implications for mediators who consider and select media for young people's use. This could include librarians on collection committees or teachers on software or library committees. What informs their choices? And how different are their choices from those of some of the young people who will be using these materials? In order to get some sense of the diversity of readers / viewers in a group or classroom, students can answer some of the same questions that the teachers may employ. A questionnaire such as the kind that Herring et al. (102)

suggest to help determine software selection could also be used in the classroom, where students

can also answer questions such as: "Does the content present subject matter in an interesting,

lively, and compelling way?" and "Do graphics make sense to the user?" and "Is the interface

easy to use?"

Perhaps librarians should reconsider the purpose of professional reviews and move

beyond a simple recommendation of a publication for a particular size and type of library

collection. Professional reviews could be sites where librarians foreground their interpretations

of a material's style, as much as of its content. Librarians could approach reviews as a means of

further investigating changes in mediators' concerns and role in a multimedia information world,

we could push our professional knowledge farther. We could focus our attention on looking *at*

publications as much as we look *through* them. Looking *through* a text is to look beyond the

textual surface, to engage with the meaning contained by the words (Lanham 123). Looking *at*

allows readers to see the ways in which our attention is cued and directed, to look at the style of

both text and design and become conscious of how style influences our interpretations. A

librarian could write a review of a website with the intent to note her responses both to the

content found by looking *through* the site's interface, as well as to the design elements found by

looking *at* the site. This kind of approach would help develop our mediator expertise, extending

our abilities to engage with the shifting surfaces of texts. ; we could then share this knowledge

with readers and with other mediators.

In a world rich with media, a reader's self-consciousness is vital to differentiate between

messages and understand how we might interpret them: "The more we are deluged with

information, the more we notice the different ways it comes to us, the more we have--in pure

self-defense--to become connoisseurs of it" (Lanham 143). Readers are becoming connoisseurs

of the information they encounter, whether this becoming is a tacit or explicit process. Mediators need to learn ways in which connoisseurship may develop in order to understand what readers want and need.

A major finding of my research is that the reading and viewing experience is so complex that it can be difficult to even understand where to start with learning about one's own reading preferences, much less those of a group of young people. But reading itself "is not an encapsulated skill that can be added on like a splint to an arm" (Rosenblatt, "The Literary Transaction" 273). The topological nature of multimodal reading and viewing in some ways, frees us from thinking that we can parse out sections of the process into digestible lesson plans. We are not going to learn about all the skills we need to read and to view, then have practice time. We are learning through practicing, and noticing what we experience in practice. We can only start to see what is around us, where we are, and observe how we experience it. In fact, Lemke suggests that a reading / viewing experience is really the meeting point of many different factors, all of which influence meaning to some extent. Not in an additive way, but in a multiplicative way: word meaning modified by image context, image meaning modified by textual context.

> The network of interactions that renders a text or multimedia object meaningful is
> not limited to those between the author or user and the object, but must also
> include those with teachers, peers, and communities of people who embody all the
> practices that make a particular sign combination meaningful. (Lemke 72)

Lemke's quote reinforces the importance of mediators in a young person's literacy practices.

This research might have practical implications for parents, reading tutors, librarians, designers, writers -- those who create and mediate works. For librarians, it's a further argument

in favour of diversity of media, diversity of subject matter and content within that media. There is a continuum in how mediators talk about the visual, from the professionally authoritative vocabulary and knowledge of designers, to the fumbling for words from the interested reader / viewer. Connors, for example, suggests that there is some ground gained when shared vocabulary is used by teachers when approaching visual materials in the classroom (77).

This work also suggests also that librarians should write about the aesthetics of texts when they are writing reviews for the professional community. This requires librarians to try and read multimodal texts with an awareness of how images, text, and other media interact in the text under review, and a willingness to think and write through how this affects the reviewer as a reader/viewer.

My interviewees categorized each of my information examples in response to the question, "To whom do you think this is addressed?" I asked myself this question as well, as I performed a meta-read of the materials. Within a real-world--that is, library--setting, individual readers and mediators might be examining individual texts with a version of this question in mind. The staff of a library, however, seldom are working at the level of the individual item, but rather, at the level of a collection. A Canadian large urban public library could easily have an annual collections budget exceeding $10 million, located at multiple branch libraries. Collections analysis is likely to start at the electronic catalogue level, identifying old and seldom-used materials for discard to make way for the new. Youth services and collections librarians may examine the collection with respect to a balance of broad categories: fiction to non-fiction, books to multimedia (games, video, and the like), or children's collection to teen collection. A sophisticated analysis tool may allow for analysis by non-fiction subject heading: how many music items versus how many items on science topics, for example. Meanwhile, tens of

thousands of young readers use various library materials, and the librarians do not necessarily have a strong sense of why.

The sessions I conducted with designers and with young people do not give a practical example of how librarians could possibly understand their own users' interest in various materials. One generalization I can make is that I saw some pattern in the ways young interviewees decided that items were in a category of interest to them, or were meant for readers who were *not-them*.

Of my five examples, only the *Prehistoric Climate Change* website was, in my opinion, clearly targeted towards a school-aged audience. The two books, the Story of Stuff website, and the Atlas app were more ambiguous in terms of an audience age target. Out of the five examples, participants only specified age groups for the *Prehistoric Climate Change* site and the *Self Sufficiency* book; for other items, participants spoke more about interest level than about age group. Looking at *The Story of Solutions*, Elliot said, "actually I think it – kids – can know about it so they when they grow up and when they get older they could start thinking about decisions they make." Tara, who said that she enjoyed both playing with dolls and listening to Ozzy Osbourne, thought the video was for "really all different types of people," including her father, a friend, and herself. Certain production decisions made with The Story of Stuff suggested to me that it might appeal to children, including the animation, the metaphor of the board game for discussing Gross Domestic Product, and the enthusiastic narrative delivery of the host, Annie Leonard.

How do readers understand and employ categories as they read across subjects, formats, and content? Some designers hold to the idea that there are only a few seconds that any text has to grab a reader's attention and intrigue her or him to investigate the text further. This, to some

extent, has led some designers to conclude that visual and/or other multimedia tricks are necessary to hook a potential end-user of their design. Henry, a designer of a young people's magazine, underscored this when I asked him whether, "when you're looking at design, do you feel like it is first impression for you?" Henry quickly shifted from discussing his own attention span (which he stated several times was quite short), to discussing the attention span of young people in general: "you've got so many seconds to catch that person's interest and make them want to [continue]." He wasn't under the illusion that he knew what all young readers like; at other times during our interview, Henry noted that his perspective on what young readers might enjoy was only one perspective, and didn't encompass all possibilities. However, I do think in the context of discussing how a designer approaches the production of a mass media object, it is difficult to speak beyond a singular category of readers. In the situation where a designer is creating a work in response to the stated needs of a client, it is a challenge to consider the individual characteristics of readers who, in the world, exist within the parameters you have drawn around their demographics?

Drucker considers how values of humanist scholarship should influence information and interface design, noting that these values allow "for contrast, comparison, and exposure of the act of making meaning rather than simply presenting options on a menu (62)". The value of humanist approaches to thinking about information is not choosing the most-frequently-liked cover graphic, but a less-abridged consideration of all cover graphics presented, for the purposes of an individual reader's interpretations.

Drucker's assignation of contrast and comparison ties in with my consideration of what makes a category. Readers / viewers understand categories in part because of how we perceive

contrast between member examples of different categories. Although a category may be "fuzzy," it still contains items that a reader / viewer has conceptually placed there. Lakoff notes,

> There is nothing more basic than categorization to our thought, perception, action, and speech. Every time we see something as a *kind* of thing, for example, a tree, we are categorizing. Whenever we reason about *kinds* of things--chairs, nations, illnesses, emotions, any kind of thing at all--we are employing categories. Whenever we intentionally perform any *kind* of action, say something as mundane as writing with a pencil, hammering with a hammer, or ironing clothes, we are using categories. (5-6)

Further, our mental acts of categorization are "automatic and unconscious," and are influenced by culture as well as embodied experience (Lakoff 6). My question to designers and to young people, "For whom do you think this information material example was written?" was a prompt to consider categories of readers / viewers to which interviewees perceived the implied reader of the particular text to belong. My question could be rephrased as, what *kind* of reader is best suited to this information material example?

In the same way that a reader/viewer is more than the sum of her/his preferences and habits, and that a reading experience is more than the sum of its parts, designed material is more than its parsed-out symbols: "Creative addition always yields more than the prosaic sum of the parts. By addition I mean putting salient factors together to arrive at an answer [...]" (Fletcher 44). Readers/viewers derive more from a reading/viewing experience than can be understood by placing the known characteristics of the experience side by side. This brings me to another question, regarding how collections function as a whole. As I showed my interviewees the five examples of materials I had brought, I believe they were all seeing each one with some after-

effect of having finished with the previous one(s). Fletcher says, "Butt two colours up next to each other and they can create a third optical hue, or at least create a third in our minds as an after-image" (58).

Drucker writes of "habits of thought" and "customs of taste," along with "differences of reading;" we build up repertoires of reading and looking over the many experiences we have with each. The research sessions I conducted included approximately six materials in total (including the example that each interviewee brought). Think about the numbers of books, websites, apps, games, movies, commercials, print advertisements, television shows, and music videos that a young person might see in the span of a year; it is impossible to guess at the numbers of materials, although we can likely assume that they are extremely high. As readers/viewers look for patterns in the information materials they encounter, they learn certain cues that they recognize after repeated exposure, which can then serve to help them quickly categorize the new materials they encounter. And yet, that categorization is, I believe, still particular to the reading and viewing experiences that a young person has had. Writing about how adolescents determine what is "interesting" about textual literature, Reeves notes, by the time people are in high school, "they have developed a number of interests and dismissed some things they have tried but not like. [...] In other words, they have a more developed sense of their own tastes, based on their experience of the world. The omnivorous curiosity of childhood has been distilled into a more mature concentration of attention into fewer areas" (241).

Sundar notes that a cue "could be tied to a source, a medium (structural or technological) feature, or a message (or content) feature" (2014). His statement here allows for the complexity that makes up a reading experience, in which a reader interacts with content that is presented / designed in a particular way, in a particular medium. The number of variables that could be

interacting in each of these categories of a reading experience would be infinite. The highly-contextual characteristics that influence a reading experience support the use of qualitative sessions in order to understand some responses that readers can have, rather than looking for experiences that a majority of readers will have.

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Appendix A: Research Consent and Assent Forms and Protocols

Assent Form #1: Young Person Assent Form

Project Title: Young People, Design, Information, and Trust
Principal Investigator: Allison Sivak

What is a research study?
- A research study is a way to find out new information about something. Young people do not need to be in a research study if they don't want to.

Why are you being asked to be part of this research study?
- You are being asked to take part in this research study because I am trying to learn more about whether the design of a book, website, or game makes you believe the information it tells you. I am asking you to be in the study because I am interested in your opinion as a young person. About 16 young people will be in this study.

If you join the study what will happen?
- You will be in the study for about ninety minutes
- I will ask you to bring a game, book, app, or website you like and talk about it with me and another young person for a few minutes
- I will ask you to sit with me and another young person, and look at some games, books, and websites about the environment. I will ask you and the other young person to tell me what you notice about each item that I show you. It will take about ninety minutes to do this
- I will audio and video record our discussion. This is so I can listen to what you say afterwards. This will help me understand the ideas and opinions of the people who are part of the study.
    - When I present on my research to other researchers, librarians, and teachers, I may include short clips of the voice recordings. I will never show images of you when I present or publish.
    - The only people who will see images of you from the recordings will be me, and my two supervisors, Dr. Margaret Mackey and Dr. Jill McClay.
- I will give you a different name in my writings and presentations on the research, so others will not know who you are.

Will the study help you?
- The study may be interesting for you, if you like to look at websites, games, and books and talk about what you see when you look at them.

Will the study help others?
- This study might find out things that will help designers, librarians, and teachers understand what young people find interesting about design. This could change how some people design materials for people your age, some day.

Do your parents or guardians know about this study?
- I have given you a letter and a form for your parents / guardians to read, so they can decide if it's okay by them for you to be part of this study.
- If your parents say that it's okay for you to take part, then it's your choice whether you want to or not. You cannot participate without a parent or guardian's consent.
- You can talk this over with them before you decide.

Who will see the information collected about you?
- The information collected about you during this study will be kept safely locked up. Nobody will be able to read it except me and my two supervisors, Dr. Margaret Mackey and Dr. Jill McClay.
- The study information about you will not be given to your parents or teachers.
- If you take part, I will ask the other young person not to talk about what you say during the study to other people. I will ask you not to talk about what the other person says, also.

Do you have to be in the study?
- You do not have to be in the study. I will not be upset if you don't want to do this study. If you don't want to be in this study, you just have to tell me. It's up to you!
- If you agree to be in the study and then change your mind, that's ok. I will destroy any information you have given me up to that point.
- You can also take more time to think about being in the study.

What if you have any questions?
- You can ask me any questions that you may have about the study.
- If you have a question later that you didn't think of now, either you can call or have your parents call me at 780.438.5456, or email me at allison.sivak@ualberta.ca.
- You can also take more time to think about being in the study and also talk some more with your parents about being in the study.

Other information about the study.
- If you decide to be in the study, please write your name below.
- You can change your mind and stop being part of it at any time. All you have to do is tell me. It's okay. The researchers and your parents won't be upset.
- You can tell me you want to stop being part of the study before we start our session or anytime during the session
- Up to one month after the session [DATE]. You can telephone me at 780.438.5456 or email me at *allison.sivak@ualberta.ca* to let me know, and that is okay.
- You will be given a copy of this paper to keep.

Please circle your answer.

Yes, I will be in this research study.   No, I don't want to do this.

_____   _____   _____
Young person's name   signature of the young person   Date

_____   _____   _____
Researcher   signature   Date

Consent Form #2: Parent / Guardian Consent

Study Title: Young People, Design, Information, and Trust

Research Investigator:	**Supervisors**
Allison Sivak	Dr. Margaret Mackey
Coutts Education Library	School of Library and Information Studies
University of Alberta	University of Alberta
Edmonton, AB, T6G 2G5	Edmonton, AB, T6G 2J4
allison.sivak@ualberta.ca	
margaret.mackey@ualberta.ca	
780.438.5456	780.492.2605

Dr. Jill McClay
Department of Elementary Education
540 Education South
University of Alberta
Edmonton, AB, T6G 2G5
jill.mcclay@ualberta.ca
780.492.0968

Background
I am inviting your child to participate in a research project, studying how the design of information materials encourages them to believe the information those materials communicate. I am sending this letter home because your child asked to have a copy of it [or: I visited your child's class and she/he is interested in participating, etc.].

The results of this study will be used for my PhD dissertation. The study is not funded by any research group or company. I may use my study as the subject of presentations or articles for magazines for teachers or professors or a book.

Purpose
The purpose of this study is to learn how young people use the graphic design of information materials (books, games, advertisements, websites) to help them decide whether they believe the information content, or not.

Study Procedures
If you and your child both agree to her/his participation in the study, here is what I will ask her/him to do:
- I will set up an appointment with your child and a second young person for a one-hour session
- Your child will come to [specify location: free space at school / library, etc.]
- Your child will bring a book, game, or website that she/he particularly enjoys to read / use to the session
- We will talk about your child's item, and the other child's item, for about 10 minutes

- I will show the two young people several books, websites, and games on the topic of the environment. (Please contact me if you would like to see examples of some of the items)
- For each item, I will ask the young people to talk about what they notice about how the item is designed or made, and their opinions on its design.
- I will video record and audio record the young people as they talk. When they are using any websites, I will record how they move around a website or point to areas on the website.

Benefits

You will not benefit from your child being in this study, but I believe you and your child will find this study interesting.

I hope that the information I get from this study will help us to better understand how designers communicate information to young people, and how the young people understand the information.

There will be no costs to you from your child being involved in this research.

Risk

There are no foreseeable risks to your child from being in this research.

Voluntary Participation

- Your child will only participate in this study if she/he wants to, and if you give permission for your child to do so.
- Your child also has a consent form for her/his signature; she/he will only be part of the study if both of you sign your forms.
- At any time during the one-hour session, your child is free to say she/he does not want to answer a question, or to ask that the session be stopped.
- You and your child have up to one month after the session date to change your minds about your child being included in the research project. If you or your child change your minds, you can contact me at *allison.sivak@ualberta.ca* or at 780.438.5456, and I will be happy to follow your decision.
- If you ask for the recordings of your child's participation in the research to be removed from the project (up to one month after the session), I will make sure the recordings are removed and destroyed. I will not use the information about your child that I previously gathered up to that point

Confidentiality & Anonymity

- This research will be used for my PhD dissertation.
- This research may be used for publishing articles, books, or included in public presentations at conferences or to classes.
- I will not identify your child by name, or name any other details that could identify your child (e.g., her/his school name or teacher name). I will give all participants different names for any publications or presentations about the research.
- I may include short excerpts from the recordings to illustrate my research interpretations. These excerpts would only include your child's voice, not his or her face.

- My doctoral supervisors, Dr. Margaret Mackey and Dr. Jill McClay, and I are the only people who will have access to the recording data. After I have analyzed the recordings, they will be kept in my locked office at the University of Alberta. Electronic files will have a password required to open them – a password only I will know.
- The recordings will be kept on DVDs / CDs in my office for 5 years after the research is completed, and then destroyed / deleted.
- If you would like to receive an electronic copy of my dissertation, or any articles or publications I write, I would be pleased to share them with you. Tell me you are interested, and I will send them to you by email.
- Parents or guardians will not receive copies of their children's recordings from the research sessions, or transcripts of their children's participation. You can receive copies of my research writings, with the children's names changed.

_____
Name of child

PLEASE CIRCLE EITHER "YES" OR "NO" TO CONFIRM YOUR DECISION TO ALLOW OR REFUSE YOUR CHILD'S PARTICIPATION.

Yes, I will allow my child to   No, I will not allow my child
to participate in this study.   to particpate in this study.

_____   _____   _____
Parent/guardian name   signature   Date

_____   _____   _____
Researcher   signature   Date

Further Information
The plan for this study has been reviewed for its adherence to ethical guidelines by a Research Ethics Board at the University of Alberta. For questions regarding participant rights and ethical conduct of research, contact [INSERT INFORMATION HERE].

Consent Form #3: Adult Consent Form (for Designers)

Study Title: Young People, Design, Information, and Trust

Research Investigator:	**Supervisors**
Allison Sivak	Dr. Margaret Mackey
Coutts Education Library	School of Library and Information Studies
University of Alberta	University of Alberta
Edmonton, AB, T6G 2G5	Edmonton, AB, T6G 2J4
allison.sivak@ualberta.ca	mmackey@ualberta.ca
780.438.5456	780.492.2605

Dr. Jill McClay
Department of Elementary Education
540 Education South
University of Alberta
Edmonton, AB, T6G 2G5
jill.mcclay@ualberta.ca
780.492.0968

Background

I am inviting you to participate in a research project, studying how the design of information materials encourages young people (ages 11-17) to believe the information those materials communicate. I found your contact information [specify: through an association listserv, through a colleague of yours, etc.].

The results of this study will be used for my PhD dissertation. The study is not funded by any research group or company. I may use my study as the subject of an article or book.

Purpose

The purpose of this study is to learn how young people use the graphic design of information materials (books, games, advertisements, websites) to help them decide whether they believe the information content, or not.

Study Procedures

If you agree to participate in the study, I will ask you to participate in a ninety-minute session, at a time of your convenience. I will ask you to review some information materials on the environment, and to tell me what you notice in terms of their design. I will also ask you some questions about your understandings of young people as end-users of your product or information design.

I will audio and video record our interview.

Benefits

You will not receive any benefits from participating in this study. I hope that the information I get from this study will help librarians and educators to better understand how designers

communicate to young people, and how the young people understand this information. There will be no costs to you from participating in this research.

Risk
There are no foreseeable risks to you from participating in this research.

Voluntary Participation
- Your participation in this study is completely voluntary.
- At any time during the interview, you are free to say that you do not want to answer a question, or to ask that the interview be stopped, without any repercussions.
- You have up to one month after the session date to change your minds about your inclusion in the research project. If change your minds, you can contact me at *allison.sivak@ualberta.ca* or at 780.438.5456, and I will be happy to follow your decision.
- I will send you a copy of your interview transcript for your review within one to two weeks after our session. You can review the transcript before making the final decision as to whether you wish your interview to be included in the research data.
- If you ask your data to be removed from the project (up to one month after the interview), I will make sure the recordings are removed and destroyed.

Confidentiality & Anonymity
This research will be used for my PhD dissertation.
This research may be used for publishing articles, books, or included in public presentations at conferences or to classes.
I will not identify you by name, or name any other details that could identify you (e.g., your workplace or employer's name). I will give all participants different names for any publications or presentations about the research.
I and my supervisors (Dr. Jill McClay and Dr. Margaret Mackey) am the only person who will have access to the study data. After I have analyzed the transcripts / recordings, they will be kept in my locked office at the University of Alberta. Electronic files will have a password required to open them – a password only I will know. The files will be encrypted.
The recordings will be kept on DVDs / CDs in my office for 5 years after the research is completed, and then destroyed / deleted.
If you would like to receive an electronic copy of my dissertation, or any articles or publications I write, I would be pleased to share them with you. Tell me you are interested, and I will send them to you by email.

PLEASE CIRCLE EITHER "YES" OR "NO" TO CONFIRM OR DECLINE YOUR PARTICIPATION.

Yes, I want to participate   No, I do not want to participate
in this study.   in this study.

_____   _____   _____
Designer's name   signature   Date

_____   _____   _____
Researcher   signature   Date

Further Information
The plan for this study has been reviewed for its adherence to ethical guidelines by a Research Ethics Board at the University of Alberta. For questions regarding participant rights and ethical conduct of research, contact [INSERT INFORMATION HERE].

Protocol #1: Interview With Young People

1. Tell me about the book, game, or website you brought today.
    a. What do you find most fun or interesting about it? (prompt)
    b. What do you find annoying or difficult about it? (prompt)
2. Now I'm going to show you a few different items. All of them are on the subject of the environment. Are you interested in "the environment" as a subject? Tell me why or why not.
3. Take a look at this [book, website, film clip, etc.]. Talk about what you notice about it.
4. What kinds of purposes would you use this for? (e.g., for school? For your own interest? To a friend whom you think is interested in this topic?)
5. Do you believe what this [book, website, film clip] says? Tell me about why. (prompt)

Questions 4-5 will be repeated for about five different information materials.
Examples of information materials to be shown:

- Suzuki, David and Boyd, David R. *David Suzuki's Green Guide*. Vancouver: Greystone / Douglas & McIntyre, 2008.
- Strawbridge, Dick and James Strawbridge. *Self Sufficiency for the 21st Century*. New York: DK, 2010.
- Smithsonian Centre for Learning and Digital Access. *Prehistoric Climate Change and Why it Matters Today*. Smithsonian, n.d. Web. 15 Oct. 2015.
- *The Story of Solutions*. dir. Fox, Louis. perf. Annie Leonard. Free Range, 2013. Web. 15 Oct. 2015.
- Harper Collins. *Atlas by Collins*. Computer software. *Apple App Store*. Vers. 2.3.1. theOTHERmedia. Web. 27 Feb. 2014. *http://atlasbycollins.com/*

6. Out of all of the things I showed you today, what stands out for you most? How come?
7. Is there anything you've seen on the environment that you think I should look at? How come?
8. Is there anything else you want to say about the items we've looked at today?

Protocol #2: Interview With Designers

For the purposes of this interview, you can consider "young people" to mean those between the ages of about 11-17.

1. I'm going to show you a few different items. All of them are on the subject of the environment. Take a look at this [book, website, app, etc.]. Talk about what you notice about it and its design.

- Suzuki, David and Boyd, David R. *David Suzuki's Green Guide*. Vancouver: Greystone / Douglas & McIntyre, 2008.
- Strawbridge, Dick and James Strawbridge. *Self Sufficiency for the 21st Century*. New York: DK, 2010.
- Smithsonian Centre for Learning and Digital Access. *Prehistoric Climate Change and Why it Matters Today*. Smithsonian, n.d. Web. 15 Oct. 2015.
- *The Story of Solutions*. dir. Fox, Louis. perf. Annie Leonard. Free Range, 2013. Web. 15 Oct. 2015.
- Harper Collins. *Atlas by Collins*. Computer software. *Apple App Store*. Vers. 2.3.1. theOTHERmedia. Web. 27 Feb. 2014. *http://atlasbycollins.com/*

[Prompting questions, to be asked either in the course of listening to the designers' talk about the environmental information materials, or at the end of the interview as a wrap-up.]
2. Tell me about your most recent design project for young people.
    1. What research did you do on your target audience(s) before you began, or as you worked on the project? (prompt)
    2. How was that research conducted? (prompt)
    3. What was the process of design like, as an experience? (prompt)
    4. Tell me about your thoughts about the final product. (prompt)
    5. Can you give me a link to a site to view the product? (prompt)
    6. What is important to young people in materials that are designed with them (in their 'role' as audience or users)?
3. What are the main considerations to you as a designer, when you are designing for young people?
    1. What aspects of designing for this audience have been easy for you? What have been difficult? (prompt)
4. Can you tell me about a situation where you would have made a very different choice for the design? Or something you've observed in others' projects that you would do quite differently? What did you learn from those, with respect to designing for young people?
5. Can you give me any examples of particular products or materials that you think have been very well designed for this audience of young people?
    1. Are there any designers, firms, or producers you particularly admire who are working with young people? (prompt)