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Way-Finding: A New Approach to Studying Digital Communications

William Daniel Glade

A thesis submitted to the faculty of
Brigham Young University
in partial fulfillment of the requirements for the degree of
Master of Arts

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ABSTRACT

Way-Finding: A New Approach to Studying Digital Communications

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This work further develops the way-finding model first proposed by Pearson and Kosicki (2017) which examines the flow of information in the digital age. Way-finding systems are online systems that help individuals find information—i.e. social media, search engines, email, etc. Using a grounded theory methodology, this new framework was explored in greater detail. Way-finding theory was created using the context of the elaboration likelihood model, gatekeeping theory, algorithmic gatekeepers, and the existence of the filter bubble phenomenon. This study establishes the three basic pillars of way-finding theory: the user’s mindset when accessing way-finding systems, the perception of how popular way-finding systems function, and the perception of the information personalization process—particularly regarding algorithmic gatekeepers and their roles in creating the filter bubble phenomenon. These pillars and the relationships that exist between each constitute way-finding theory.

Keywords: way-finding, elaboration likelihood model, gatekeeping theory, algorithms, filter bubbles

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Way-Finding: A New Approach to Studying Digital Communications

The turn of the century ushered in a new age of living. People all over the world knew that the internet was going to change the way they lived (Pariser, 2011a), but very few—if any—could have foreseen the drastic change that the internet would cause in many aspects of society. The way society communicates, shops, maintains relationships, etc., has been revolutionized by the phenomenon of the internet. Additionally, the traditional flow of information has been turned on its head; now, individuals are able to seek out their ‘truth’ wherever they may find it. To do this, they rely on way-finding systems like search engines, social media, and curators (Pearson & Kosicki, 2017).

This change in the flow of information has been particularly influential in the contemporary news cycle. In 2017, the Pew Research Center found that digital news consumption had grown from 38 percent to 43 percent of U.S. adults who consume news online often—ranking second only to television at 50 percent, ahead of radio (25) and print (18) (Bialik & Matsu, 2017) Speaking to the nature of digital journalism, Janine Gibson, editor-in-chief of theguardian.com, stated: “[Y]ou have to go find your audience—they’re not going to just come and read it...” (Gibson, as quoted in Pearson & Kosicki, 2017, p. 1087). This new model of digital journalism—that is, journalists having to find their audience rather than what was traditionally the audience finding them—creates a need for a new framework to study the flow of information.

Pearson and Kosicki (2017) explored this concept when they theorized a new way of looking at news consumption in the digital age: way-finding. The way-finding framework facilitates scholars’ ability to understand the process through which individuals find the

information they are looking for online. This framework, though in its infancy, provides scholars with the ability to better understand how the flow of information occurs in a digital age.

To more fully understand way-finding, past theories can inform us of the building blocks on which this new framework is established. Understanding the foundation of how the flow of information occurred in the past will help researchers to grasp how seeking information has evolved with time and where it is headed in the future.

One key theory to understand the way-finding framework is gatekeeping theory (Pearson & Kosicki, 2017). Gatekeeping theory was employed by communication and journalism scholars for the better part of half-a-century. The usefulness of this theory is particularly demonstrated in its underlying metaphor: individuals seeking truth were kept from it by a gate which was guarded by a gatekeeper who determined what information would flow out of the gate to the public (Pearson & Kosicki, 2017). Past research suggests that journalists held this role (White, 1950). Recently, however, the usefulness of the gate and gatekeeper metaphor has come under fire because of the ability for individuals to circumvent the gate and gatekeeper altogether to find the information they want through the internet (Bro & Wallberg, 2015; Heinderyckx, 2015; Pearson & Kosicki, 2017).

The purpose of this study is to further develop the way-finding model as established by the seminal research of Pearson and Kosicki (2017). This study looks to further develop the framework of Pearson and Kosicki into a new theory of communication in effort to build understanding of how information is disseminated in the digital era. Consequently, I first discuss how gatekeeping theory functioned in the past and how it has changed with the internet. I also discuss key factors contributing to the changing nature of gatekeeping; these elements include discussion on algorithmic gatekeepers and filter bubbles. Both factors are key in understanding

the fundamental change that is occurring in gatekeeping theory and the need for the way-finding framework. The author will explicate the connection between the new algorithmic gatekeepers and their relationship to the filter bubble phenomenon. Finally, the way-finding framework will be explained. A part of the way-finding framework section will include a brief overview of the elaboration likelihood model (ELM) due to its foundational role in explaining user behavior online. Following this section, the correlating research questions for this study will be given.

Literature Review

Gatekeeping Theory

Gatekeeping theory has a rich history in communications research. The idea of gatekeepers was originally coined by Kurt Lewin (1943, 1947) and applied to news media by his colleague, David Manning White (1950). Gatekeeping theory is the study of the processes, channels, and forces that affect the flow of communication to the public (Lewin, 1947). The body of research of gatekeeping theory looks to explain how those processes, channels, and forces affect gatekeepers and their decision making. The first gatekeeping force explored was how journalists' personal biases affected this flow (White, 1950). Later, several scholars studied how organizational processes acted as a force that constrained the flow of information (Gieber, 1964; Lester, 1980). Cultural "newsworthiness" of media (Fishman, 1980; Schudson, 1989) was also found as a force that influenced the gatekeeping process. As time passed, the body of gatekeeping literature began to grow, exploring additional forces that explained the flow of information during the late 20th century. One study examined how multiple actors influenced the gatekeeping process (McNelly, 1959); an example of this can be found in early work focusing on how editor's and producer's involvement affected the process (Donohew, 1967; Hickey, 1966,

1968). This was the beginning of the development of gatekeeping theory that would help researchers explain the flow of information via traditional news sources.

Later research focused more on the societal implications of gatekeeping theory. Scholars focused on studying how gatekeeping occurred from a human ecological perspective (Bronfenbrenner, 1979). Others studied how it affected a global society (Westley & MacLean, 1957; Shoemaker & Reese, 1996; Thomason & LaRocque, 1995; Nossek, 2004). Additionally, scholars looked at how social institutions acted as gatekeepers (Shoemaker, 1991). These institutions would decide what information they would make public and share with the press (Gieber & Johnson, 1961; Soley, 1992). Other forces, like economics, were used to examine how the financial goals of an organization influenced gatekeepers (Turow, 1997; Bagdikian, 2004). These studies helped to develop a rich theory for scholars to use when studying the flow of information.

Gatekeeping in Transition

Just as gatekeeping theory began to achieve a rich depth and breadth of understanding, a fundamental change occurred in how people began to look for information. The advent of the internet caused massive upheaval in the realm of gatekeeping theory research (Pearson & Kosicki, 2017). The way society looked for information changed fundamentally, allowing more information to flow to the public. This change has led scholars to seek to understand how gatekeeping theory applies to the flow of information in the digital age.

With the development and implementation of the internet, a new form of gatekeeping has emerged. Several key limiting factors in gatekeeping theory were eliminated by the internet—particularly scarcity and terminal gatekeepers. Scarcity of space was once a limiting force, which influenced gatekeepers to determine what information would be published (Vos, 2015;

Shoemaker & Vos, 2009). This space existed in many forms: newspaper column inches, minutes in broadcast, etc. The internet has removed scarcity constraints on communication organizations (Vos, 2015) and allowed organizations to publish vast amounts of digital content (Bruns, 2005; Bro & Wallberg, 2015; Pariser, 2011a). The increased bandwidth of organizations to host digital content cheaply removed the need for gatekeepers to pick and choose what information reached the public. Instead, news organizations, public relations departments, and even individual citizens may publish as much information as they would like on their websites with little to no cost. This increased level of content creation creates a larger flow of information from the gatekeepers to the public. In 2011, Google's CEO, Eric Schmidt stated that humans were now creating as much information every two days as they had since the dawn of time until 2003, (Pariser, 2011a). That amount of data production illustrates how scarcity, a key factor of gatekeeping theory, has been eliminated by the internet.

In addition to the changes in scarcity, the idea that journalists are the "terminal" or final gatekeeper (White, 1950) is frequently no longer the case. Numerous individuals now act as gatekeepers. For example, social media allows users to create and disseminate their own content to the world (Coddington & Holton, 2014) and internet audiences can now act as "journalists" in their own right (Bruns, 2011). They may determine what is and is not newsworthy for themselves (Bruns, 2005) and share it with their friends and associates online. As Bro and Wallberg (2014) noted, family, friends, and other acquaintances are the terminal gatekeepers when they like, share, and comment on stories they feel are important. Moreover, news curation websites are also new players in gatekeeping theory (Bruns, 2005) gathering information from other websites for the public to consume (Pariser, 2011a). These examples are just a few ways that the gatekeeping role has become more ubiquitous.

A Case for Algorithmic Gatekeepers

With the advancement of internet technologies, some began to explore the role and functionality of algorithms as information gatekeepers (Bozdag, 2013; Bro & Wallberg, 2015; Bar-Ilan, Keenoy, Levene, & Yaari, 2009; Goldman, 2005). Internet algorithms are defined by one scholar as “complex systems composed of human operators and technology” (Bozdag, 2013, pp. 210). As stated previously, humanity generates vast amounts of information. It is estimated that our global society generates 2.2 petabytes of information daily (Marr, 2018). There is an obvious need for algorithms to sort through the information and reproduce it for users in a convenient, digestible format. Without these algorithms to find, sort, and present relevant data to users, much of the information available to individuals would be rendered obsolete due to lack of accessibility.

Bias in algorithmic gatekeepers. Algorithms play an important role in providing individuals access to the vast ocean of information that exists today; however, algorithms acting as the gatekeepers of information are not without their downsides. The issues associated with algorithmic gatekeepers are important to consider and should be brought to the attention of the public (Bozdag, 2013). For instance, just as human gatekeepers in the past were brought into question and discussed in-depth in the gatekeeping theory literature, many of those same questions need to be applied to the algorithmic gatekeepers of the 21st century.

Algorithms also have biases and prejudices. Bozdag (2013) asserted that several forms of biases are programmed into each algorithm and do affect the content that is exposed to users. Researchers have shown that computer programs can and do discriminate against individuals and groups while favoring others (Friedman & Nissenbaum, 1996). The algorithmic code may also include other issues like pre-existing societal bias, technical bias, and emergent bias (Friedman

& Nissenbaum, 1996). Algorithms, just as humans, have forces that influence their ability to decide what information to share. Because of this, the prejudices and biases that do exist need to be examined further to help our understanding.

To help guide researchers, connections between human and algorithmic gatekeepers may be drawn to give insight for next steps. For example, gatekeepers, as described by Lewin, White, and other scholars, have many similarities to the algorithms programmed to give users content they think is relevant to the individual. Algorithms are constrained by the code that creates them, like the organizational constraints that dictate journalists' selection of news. Comparable to how journalists are dependent on social institutions sharing information with them, algorithms depend on individuals to share key demographic and psychographic information through each action undertaken online. When algorithms act as gatekeepers, societal forces can be equated to trends and acceptable practices within the social networking platforms (Bozdag, 2013), search engines (Vos, 2015), and other websites. The algorithmic gatekeepers also display content to users based on the economic goals of the organization—just like traditional media. Many other similarities exist between the traditional journalistic gatekeeper and the digital algorithmic gatekeeper and should be considered when examining algorithms.

In summary, algorithmic gatekeepers are not devoid of prejudices or biases but are riddled with numerous factors just as their human gatekeeping predecessors were. Regardless of these encoded prejudices inherent in algorithmic gatekeepers, this study does not look to suggest the abandonment of using algorithms as gatekeepers of information. Rather, the purpose is to explore how these biases influence and affect the flow of information in the digital age. Algorithmic gatekeepers will play an important role in any emerging theories trying to explain the flow of information in the digital age.

An In-Depth Look at the Forces Influencing Algorithmic Gatekeepers

Much like Lewin (1947) did half a century previously, Bozdag (2013) outlines the channel through which digital information flows and the different gates and pressures associated with algorithmic gatekeepers. He identifies five gates along the digital information channel that are important for understanding how algorithms act as gatekeepers in the digital world. The five channels are collection and selection; selection and prioritization; deletion, withholding, and disregarding; localization, customization, and channeling; and, display, repetition, prioritization, and timing. Each gate and the corresponding pressures and gatekeepers will be discussed.

Forces influencing the source selection and collection algorithm. During the collection and selection phase, the source selection and collection algorithm scours the internet for the information in the user's query. Technical limitations, source reputation, and financial constraints all factor into whether the information is collected during this gate in the channel (Bozdag, 2013). Algorithms, therefore, are compelled to make decisions based on these criteria. All these factors are considered by an algorithm as it determines whether to select a source of information to be passed along through this gate.

The forces exerting pressure on algorithmic gatekeepers resemble of forces that pressure human gatekeepers. Parallels between the way the source selection and collection algorithm functions and the way White (1950) described the function of newspaper editors as gatekeepers are easily drawn. Newspaper editors based their decisions off what they believed was newsworthy to their readers, just as the selection and collection algorithms make decisions based on what the information they regard as salient to the topic searched by the individual based on keywords.

Forces influencing the information selection and prioritizing algorithm. Next, during the selection and prioritization gate, the information selecting/prioritization algorithm determines which sources gathered in the previous phase are deemed more important than others. Own content prioritization (Efrati, 2010; Albanesi, 2011; Edelman, 2011), third party manipulation (Segal, 2011), popularity bias (Introna & Nissenbaum, 2000), information type (Bozdog, 2013; Goldman, 2005; Vaughan & Thelwall, 2004), authority bias, and age of the information are all pressures associated with this gate (Bozdog, 2013). Algorithmic gatekeepers may decide to prioritize content that is directly related to the organization that coded them. Additionally, popularity of a website or source of information is likely to drive engagement and therefore will be prioritized by the algorithm. These forces influence the algorithm's decision-making process and likelihood of passing information through this gate.

Parallels between this set of algorithms and newspaper editors may also be drawn. Just as the editor-in-chief would decide what was most pertinent to the public would be placed on the first page, these algorithms place information they deem salient to the user's search query on the front page of the search engine results or on the top of your social media platform's newsfeed. Salience continues to serve as an important part of the gatekeeping function whether the gatekeeper is a human or a computer program.

Forces influencing the moderation process. The third gate is manned by a human operator who determines what information should be withheld, deleted, and disregarded. The forces affecting this gatekeeper are similar to traditional gatekeeping theory; these gatekeepers have their own personal biases, judgments, and ideas that determine what information is withheld and what information is let through the gate (Bozdog, 2013). Organizational factors, government regulations, and other third-party requests are also forces that determine whether

information flows through the gate or not (Bozdag, 2013). It is important to note that at this time, content-based decisions, like whether something is considered pornographic or violent, still requires human judgment to determine whether content should be shown to the user or not. But, search engines and social media platforms, like YouTube, can differentiate between copyright infringement of audio clips using algorithms. One may posit that in the future algorithms will have the ability to fill the moderation role entirely, eliminating the need for a human gatekeeper.

Forces influencing the personalization algorithm. The localization, customization and channeling gate uses a personalization algorithm to determine if the information is specific enough for the user. The pressures here are user information history, user preference, location, novelty, audiences, interpersonal networks, and advertisers (Bozdag, 2013). User interaction history and preferences can be divided into two different sections: explicitly defining their preferences themselves through manually programming the definition in the settings and implicit personalization using interaction history. Personalization of information has become an important topic because of the potential societal implications it may have. Because this is true, more information on this gate will be included compared to the previous gates discussed.

Though personalization through users explicitly opting in or out of information has become an important part of the digital information channel, concerns with it are important to discuss. Scholars have raised alarm to the potential societal harm that this process may cause. One scholar suggested that this type of filtering leads to homophilic tendencies that can create online echo chambers and polarizing discussion (Sunstein, 2007). In his book, *Republic.com 2.0*, Sunstein (2007) postulates on the negative effects explicit filtering may have on our democratic society. It is also worthwhile to mention that research shows people's interests change with time (Lavie, Sela, Oppenheim, Inbar, & Meyer, 2009), as well as that declared interests and actual

interests may be different (Tewksbury, 2003). Therefore, when people self-select themselves to see, or not see, certain types of information, they may be susceptible of limiting themselves from receiving the information they want to see later because of their current interests (Bozdag, 2013). All these examples provided by researchers highlight important concerns that should be considered when discussing personalization.

The concerns associated with implicit filtering are also worth noting. These algorithms are created and powered by private, for-profit companies which design the algorithms to promote interaction between the users and the information presented (this is to increase advertising revenue—which will be discussed later). To do this, algorithms incorporate the user's history to present them with the information they are most likely to interact with. This means one's own personal biases may manifest themselves in the search results or social media newsfeeds. People tend to be homophilic and interact with information that confirms their personal beliefs (Pariser, 2011a). Therefore, individuals are presented with information that confirms their beliefs more often than information they do not agree with because they are not as likely to interact with it. This perpetuates the problem as users interact more and more with the information that they agree with, the algorithm will present them with more bias confirming information. Thus, eliminating the access to information that is equally important, yet contrary to the user's own beliefs. This leads to the eventual and complete lack of opposing viewpoints.

Location also factors into the personalization algorithm and it has been shown in the research that users in different countries, states, and even cities, will generate different results based on their location while using the same query terminology (Garcia-Molina, Koutrika & Parameswaran, 2011). Filtering based on location is important for users looking for location-based results like where to eat, the location of a store, etc., but most search engines and social

media platforms do not differentiate between searches based on the context of the query (Bozdag, 2013). The traditional gatekeepers of the newspaper and broadcast era would do similar things to determine the importance of a story. A local newspaper in the intermountain west would hardly care to report what is going on in a small town located in the southeast because that information is not important to those within its circulation.

Audience feedback is an important aspect of the personalization algorithm as well. In the digital age, audience feedback is almost immediate. This helps search engines and social media websites to use the search behavior of community-based search results to be taken, adapted, and applied to conventional search engine results to meet a specific audience's or community's needs (Smyth, 2007). This may cause several issues for the dissemination of information among internet users.

To highlight the function of audience feedback in the personalization process, Bozdag (2013) uses the case of Reddit. This example is particularly relevant because users determine the salience of an article by their up and down votes on it. The democratic approach to determining relevance may seem like an appropriate way to determine whether other users should be exposed to that information, but, though it seems intuitive, there are several issues with social media platforms using this method to determine the level of exposure information receives. In Reddit, the first votes are weighted heavier than the next 100 votes, so stories that have 10 and 50 votes may have similar rankings on the page despite one having 5 times as many votes (Bozdag, 2013). Controversial stories that have similar levels of up and down votes will, therefore, have a low ranking compared to stories with mostly upvotes (Salihefendic, 2010). This is just an example of how salience should not be determined only by a democratic system of "upvotes" and "downvotes". Homophilic results still occur via this process and an increasingly biased set of

search results for users. Researchers have also determined that businesses and digital marketing companies are able to manipulate social media websites to increase the “upvotes” or “likes” their content gets by creating fake users or buying likes for their content (Tynan, 2012) therefore skewing the “democratic” personalization process as well.

Interpersonal networks are the fifth-factor Bozdag (2013) cites that affects personalization algorithms powering search engines, social media sites, and other websites. Researchers have found that individuals tend to obtain information from interpersonal networks rather than formal sources (Chen & Hernon, 1982; Durrance, 1984; Sturges, 2001). Studies have also shown that individuals group themselves into formal and informal social groupings (Bozdag, 2013; Katz & Lazarsfeld, 2005), and rely on these groupings to make decisions and define personal opinion (Granovetter, 1981). Because of this tendency, internet service providers began using personal connections to generate personalized content rather than solely relying on explicit decisions made by the user (Bozdag, 2013). Similarly, news media gatekeepers relied on their own personal social groups to inform them about what would be salient to their readers.

Forces influencing the presentation algorithm. Finally, the display, prioritization, and timing gate has a presentation algorithm that will display the information asked for in the user’s query. The attractiveness and location of the item are the two forces that Bozdag (2013) mentions as limiting forces influencing this algorithm. This is because research suggests that how search engines—or social media newsfeeds—present the information affects how users react to the information (Joachims & Radlinski, 2007; Bar-Ilan et al., 2009). Therefore, the information that makes it through the other four gates may not make it through the last gate because the last algorithm optimizes the information on its attractiveness and where the item is

located on the page. This final gate is the last filter through which information passes to finally reach the user.

The Filter Bubble

Algorithms, particularly those that personalize web content for users, are quickly becoming the final gatekeeper; they are ultimately what decides what information gets placed in front of individuals. Because of this, every person using Google, Facebook, Amazon, or any other website online, is potentially experiencing their own, unique online universe. The concept, that individual internet users exist within their own personal media ecosystem or universe, is referred to by researchers as a filter bubble (Pariser, 2011a).

Definition of a filter bubble. To better illustrate the concept of a filter bubble, a short anecdote may be helpful. Pariser cites an informal experiment he conducted with several of his friends during his TED Talk in 2011. Pariser (2011b) asked two of his friends to search “Egypt” using Google. Both individuals’ queries generated very different results. Though they lived in the same area, had similar interests, and typed the exact same query into the search engine, they received very different results. The discrepancy between the two individuals’ searches illustrated the concept of a filter bubble. Everyone observed different content because of the personalization algorithms employed by Google to generate content that the algorithm believed each individual intended to find. This case analysis highlights that individuals may enter in the exact same information into Google or follow similar pages and share hundreds of mutual friends, yet each experience is tailored to their own unique online behavior, location, interactions, and a myriad of other factors

The genesis of filter bubbles. Filter bubbles are a direct consequence of personalization algorithms employed by internet companies. The filter bubble phenomenon started with

companies like Yahoo!, Google, Amazon, Facebook, etc., efforts to provide individuals with a more personalized experience. Doing so allows companies to leverage their platforms for advertisers, and therefore improve overall revenue (Pariser, 2011a). Because attention is the currency in the digital age (Webster, 2014), advertisers are looking for better ways of serving their content to their chosen targets. Consequently, companies that can gather large amounts of user demographic and psychographic data and leverage that data to facilitate hyper-targeted advertising to users become extremely important. Companies such as Facebook and Google who have vast amounts of user data, therefore, are extremely helpful to advertisers but only if users are on their platforms. Because of this, these companies use the personalization algorithms to help deliver content that is going to be pleasing to each individual user and eliminate any that might cause them to use the platform less.

Associated issues with filter bubbles. The construct of filter bubbles presents several implications. For instance, the problem with filter bubbles are not the hyper-targeted advertising or the relevant content that is provided via the personalization algorithms; rather, filter bubbles can become an inadvertent censoring of opposing ideologies because algorithmic gatekeepers are programmed to expose users to content with which they will most likely interact (Sunstein, 2007; Pariser, 2011a). This means that users will generally see content that they like (Pariser, 2011a). When this personalization reaches the point of filtering out opposing political, social, or economic ideologies, censorship can occur.

Way-Finding as a New Theory to Study the Flow of Information in Society

Gatekeeping theory should look to expand its understanding of algorithmic gatekeepers and the effects of filter bubbles created by them in future research. However, the theoretical framework of gatekeeping theory is still lacking when trying to explain the ways in which people

find information in the digital age. This is because gatekeeping theory still examines the flow of information from a “top-down” model where the decision makers of what information is passed along to the public are all within the organization (Vos, 2015). A new theoretical framework needs to be developed to focus on a dynamic user taking the public’s ability to choose what information they consume into account. This new theory would take both gatekeepers and users into account when describing the process of sharing information. Accordingly, scholars will be able to learn more about how individuals navigate the vast amounts of information accessible to them.

One emerging framework that highlights new forms of digital gatekeeping is called “way-finding”. Way-finding is a construct established by Pearson and Kosicki (2017) in their seminal study examining the need for a new approach to journalism studies. Way-finding is a term borrowed from the architecture and city planning disciplines. It explains how architects and planners create “way-finding systems that will ‘not only direct visitors to destinations but also serve as a teaching tool that educates the visitor on the boundaries, destinations and key features’” (Signage Foundation Inc., as quoted in Pearson & Kosicki, 2017, p. 1091).

This notion of way-finding translates well for the way individuals find information in the digital age. The principal differentiation between gatekeeping theory and the way-finding construct is the approach of the individual in obtaining needed information. The “gatekept” are those who consume media that is handed to them from gatekeepers whereas the “way-finder” is someone who searches out the content they are looking for by using the internet and all its tools. Thus, much like city planners and architects, purveyors of information must concern themselves with creating content and designing their website experience to fit well within a way-finding system. Therefore, understanding the user and the processes they use to find information will be

key to developing way-finding theory as one that accounts for both a dynamic user and the gatekeepers of information.

Way-Finding and the ELM: Using ELM to Understand Users' Intentions

As the rising generations mature in a comparatively new environment of news consumption, the old gatekeeping models may become increasingly less important (Bro & Wallberg, 2015), giving way to the process described through way-finding. The way-finding process is both active and passive (Pearson & Kosicki, 2017). At times, individuals go to the internet to find specific content that they need at that moment; other times, individuals wander the digital streets looking at whatever video, story, or photo catches their eye at that moment (Pearson & Kosicki, 2017). Understanding the processes this new way-finder looks for, and consumes information, will determine whether any new theory is able to accurately describe the flow of information in the digital age.

Elaboration likelihood model. The information found during the way-finding process differs depending on whether an individual is actively searching for information or just passively consuming content. To help understand how individuals process information differently depending on which mindset they are in, researchers may look to the elaboration likelihood model (ELM) to shed light on how it impacts the way-finding process. The ELM has an important role in communications' literature and will be helpful in developing way-finding theory.

The ELM has been used primarily in literature focused on persuasion to help explain "the social information-processing phenomena that are focused specifically on persuasion" (O'Keefe, 2013, p. 137; Petty & Cacioppo, 1986; Petty & Wagner, 1999). The basic tenets of the ELM are that there are two different processes that individuals may engage in when consuming persuasive

messages (O’Keefe, 2013). This is important when talking about the flow of information in the digital age. Individuals are tasked every day at determining what sources deserve more attention and which do not. It is easy to understand then how individuals will use way-finding systems differently when looking for information actively or passively. Both the active and passive way-finding behaviors relate particularly well with the processing routes associated with the ELM.

The first route to process information according to the ELM is what is called central route processing (O’Keefe, 2013). In the Sage Handbook of Persuasion, O’Keefe (2013) states that attitudinal changes occur when “elaboration is relatively high” (p. 138). Furthermore, elaboration is defined as “issue-relevant thinking” (O’Keefe, 2013, p. 138). There are two primary factors that help determine the likelihood that an individual will “elaborate” on information using the central route. The first is whether the information promotes a pro-attitudinal position or a counter-attitudinal position (O’Keefe, 2013). Information that confirms previously held stances or beliefs on any topic is generally seen more favorably by individuals than those which go against those stances or beliefs. Secondly, the strength of an argument influences whether an individual will use the central route (O’Keefe, 2013). The Sage Handbook of Persuasion states, “Under conditions of high elaboration, message recipients are closely scrutinizing the message contents” and will determine whether to think critically about the information or not (O’Keefe, 2013, p. 139). Therefore, if a piece of information is considered logical and well-informed, individuals will more likely to consider it (Petty & Cacioppo, 1984).

The second route used to process information is the peripheral route (O’Keefe, 2013). The most notable trigger for the peripheral route processing is when an individual is reliant on heuristics or “simple rules—which don’t require much thinking...” (O’Keefe, 2013, p. 139). According to the ELM, heuristics are activated by “peripheral cues” (O’Keefe, 2013, p. 139)

which occur when individuals are in a low-elaboration mindset (Petty, Cacioppo & Goldman, 1981). In other words, when individuals are not highly invested in a topic or piece of information, they are more likely to judge the information based on factors like source credibility (Rhine & Severance, 1970), source likability (Chaiken, 1980), and how others respond to the information (Axsom, Yates, & Chaiken, 1987).

Understanding these basic tenets of the ELM will prove valuable when considering how individuals interact with way-finding systems. Pearson and Kosicki's active and passive way-finding process (2017) are closely related to the two processing routes described by the ELM. Therefore, exploring how individuals interact with way-finding systems when passively finding content relates to the peripheral processing route, and how when actively looking for information relates to the central processing route, will be particularly important in building the new way-finding theory.

Justification for Way-Finding Theory and Guiding Research Questions

As shown from a review of the literature, navigating the landscape of how individuals access information is complex; hence, a need for a new paradigm through which journalism, and more broadly the flow of information, may continue to be studied and accurately explained in a digital world. As Vos stated in *Gatekeeping in Transition* (2015), "the dynamics of gatekeeping are in transition, but the model remains a useful analytical tool" (p. 9). Though gatekeeping theory is in transition, it still has an important place within mass communications scholarship; and, neither Pearson and Kosicki (2017) nor this study, call for its abandonment. Now, however, gatekeepers are just a small part of the online process that consumers use to find the information they seek, and therefore, a broader theory is required to provide a full understanding of this new process.

The key difference between way-finding and gatekeeping is the frame of reference used to study the flow of information. Where gatekeeping saw audiences as largely passive groups receiving information—which still exists within the digital realm—the way-finding framework acknowledges the existence of a digital audience that is dynamic in nature. It will be easier for researchers to study this new dynamic digital audience, their relationship with the internet, how they obtain information online, and how they interact with both traditional and algorithmic gatekeepers—through the new way-finding theory. Furthermore, understanding whether the consumer is aware of the filtered nature of the information they seek and *why* they choose to consume the media they consume will be important to explore using the way-finding framework established by Pearson and Kosicki (2017).

As such, the objective of the present study is threefold: first, further exploration is needed in understanding the construct of way-finding. Related inquiry may include investigating way-finding systems within the internet/digital environment, how content is created to fit within these systems, and how the way-finding systems affect passive and active users. Second, greater insight is needed to understand individual users' perceptions of the way-finding systems, online gatekeepers, and content created for the digital system. Finally, with having so much information at their disposal, understanding the process individuals use to determine which information sources to give their attention to is necessary to better understand the relationship between way-finding systems and the systems' users. Consequently, the following research questions will guide this study:

RQ₁ What are the perceptions of individuals of the way-finding systems that exist on the internet?

RQ₂: Do individuals understand the role algorithms play in these digital way-finding systems and the filtered nature of the information received?

RQ₃: How do individuals process the information they find via the way-finding systems and their algorithmic gatekeepers?

Methods

As stated previously, this study looked to understand how the flow of information has changed in the digital era. This study sought to build off of the work presented by Pearson and Kosicki in 2017. This was accomplished by answering the research questions above and focusing on how way-finding systems are connected to the information and the internet user.

Recruitment

The present study received approval from the institutional review board (IRB) on December 10, 2018, at an expedited level, categories 6-7. After receiving approval, two groups of individuals were recruited for this study: individuals who use the way-finding systems to look for information on the internet and the individuals who participate in “building” these way-finding systems. Recruitment for the way-finding users was done by choosing university students from Brigham Young University in Provo, UT who met several requirements. The first requirement was that the students fall between the ages of 18 and 30 years old. Individuals who fall within this age group are digital natives, and as Pearson and Kosicki stated in their study:

[Y]ounger generations will soon have grown up in a digital world. They will be less likely to simply replicate traditional media consumption habits online. These news users will not have grown up with the daily newspaper or the network news

shows. Instead, they will begin their news consumption in a world where getting news from social media, gatewatchers and search engines is the norm. (p. 1088)

The participants chosen for this study fall within the frame as described by Pearson and Kosicki (2017). These students were all familiar with using the internet for finding information and fit within the way-finding user framework established above. Secondly, the candidates were individuals who self-identified as heavy internet users—more specifically, individuals who used the internet or social media for 15 or more hours weekly. This was decided because heavy users of the internet were also more likely to fall within the way-finding framework and not the traditional gatekeeping model.

To find these prequalified individuals, a short qualification survey was sent to interested students from Brigham Young University. In this survey, demographic data were collected first, followed by a question asking about internet and social media usage and whether the candidate was willing to participate in an interview with the researcher. All participants in the study were pulled from the prequalified candidates in this survey.

Recruitment for the second group, or the individuals who may be seen as traditional gatekeepers, were done by choosing professionals within digital marketing, digital advertising, online public relations, digital journalism or other online communications fields. These individuals were chosen because they, as well, interact with these digital way-finding systems when trying to optimize their content for the new way-finding systems and the new way-finding audience. These individuals were all ages 26 to 38 years old, falling within the millennial generational cohort. This was decided because these individuals were older than the students and had more firsthand experience in the development of content for these digital way-finding systems because of their professions. These professionals were all located in either the Greater

Salt Lake City or Utah County Areas, Utah. Both areas are rich with companies who either specialize in digital communications or have strong digital communications within their marketing departments. These individuals also took the prequalification survey to collect demographic and professional data for reporting purposes. The participants were contacted by the researcher through LinkedIn.

Data Collection

In this study, the chief data was semi-structured interviews. Polkinghorne (1989) recommends anywhere from five to 25 interview participants to achieve saturation for in-depth interviewing in qualitative research. For the scope of this study, 15 individuals were interviewed for approximately half an hour to an hour each. The researcher did reach saturation with the 15 interviews. Eight interviews were with Brigham Young University students and seven interviews were with digital communications professionals.

Data Analysis

Traditionally, gatekeeping theory scholars employed content analysis to explore what types of content were chosen by gatekeepers and why they choose to permit those types of content through the gate while rejecting others. For instance, White (1950) used content analysis to understand what stories were included and what stories were rejected by the newspaper editor. Other researchers used content analysis to study sources (Seo, 1988; Gans, 1979; Sigal, 1973) and types of news reported (Scott & Gobetz, 1990).

Many scholars blended methods using a content analysis with surveys (Shoemaker, Eichholz, Kim, & Wrigley, 2001), in-depth interviews (Berkowitz, 1990), and observations (Berkowitz, 1990) to more fully capture the gatekeeping process and the context in which these decisions are made (Shoemaker & Vos, 2009). Each of these methods focused specifically on the

interaction with the gatekeepers to the flow of information within the gatekeeping theory model—which has changed significantly with the internet. The way-finding framework established by Pearson and Kosicki (2017) approaches the study of the flow of information from a different perspective; therefore, a different research methodology should be explored to find the best results for the study’s chosen research questions.

Because way-finding is a nascent framework (Pearson & Kosicki, 2017), a qualitative research methodology was used, specifically grounded theory, to develop this framework further and gain a deeper understanding of way-finding concepts. Grounded theory was first employed by Glaser and Strauss (1967). Corbin and Strauss defined grounded theory as “a specific methodology developed . . . for the purpose of building theory from data” (2008, p. 1). Grounded theory helps the researcher to “articulate [sic] a compelling ‘logic of discovery,’ along with a set of formalized rules and vocabulary, that bring a sense of order to the messy process of qualitative research” (Lindlof & Taylor, 2011, p. 250). Lindlof and Taylor (2011) wrote that grounded theory is based on three tenets: first, the emerging theory is based on relationships between data and categories used to code them; second, the categories are developed through the constant-comparative method; and finally, the codes, categories, and category definitions continually change while the researcher is in the field and new information is introduced to the data set (p. 250). These three tenets guided this study’s use of grounded theory.

As mentioned previously, the first aspect of using grounded theory as a methodology was analyzing the data for relationships between the data and the categories that emerge from that data. This was accomplished by the researcher “coding for as many categories as possible in the data” (Lindlof & Taylor, 2011, p. 250). To do this effectively, the data was initially analyzed through an open coding approach, specifically through a “line-by-line analysis” of the transcripts

of each participant's interviews to the researcher's questions (Strauss & Corbin, 1990, p. 72).

The ultimate goal of this was for the researcher to open the inquiry into how individuals fit within the way-finding framework and begin looking for and establishing patterns from the data (Strauss, 1987).

The next step in the grounded theory model was done concurrently with the first step. It was to develop the categories using the constant-comparative method between the units of data that were coded during the open coding process and the categories they pertained to. Within the grounded theory model, the constant comparison method helps to define each category with greater precision and control the total number of existing categories used in the emerging theory's development.

A codebook was created during this step to help guide the "development and evolution of [the] coding system" and "for documenting the codes and the procedures for applying them" (Weston, Gandell, Beauchamp, McAlpine, Wiseman, & Beauchamp, 2001). Additionally, during the mid-stage of the data collection/analysis, the researcher used theoretical memos to "flesh out thematic meanings of the categories" (Lindlof & Taylor, 2011, p. 251). All these steps were an important part of the constant-comparative model and used by the researcher to help guide the open coding process.

After the initial line-by-line analysis of the data and using the constant comparison method, the researcher proceeded to the integration and dimensionalization steps of grounded theory. Integration is defined as the connecting of two or more categories together under one or more overarching themes that unite each category together (Strauss & Corbin, 1990; Lindlof & Taylor, 2011). Integration is done by using a process called axial coding. Axial coding is the connection of categories by creating a new set of codes that make connections between each

category and uniting them under overarching theory or principle of integration (Lindlof & Taylor, 2011) Specifically, these new codes interact with the categories by looking at the conditions causing it, the greater context in which surrounds it, the action/interaction strategies that carry it out, and finally, the consequences of those strategies (Strauss & Corbin, 1990).

Dimensionalization is the final step in the grounded theory method. Dimensionalization is defined as “identifying properties of categories and constructs...[and] exploring its attributes or characteristics along continua or dimensions (Spiggle, 1994, p. 494). Both processes were used to reorganize the coded units of analysis and “produce deeper meanings of them” (Lindlof & Taylor, 2011, p. 252). In a way, dimensionalization is a researcher forecasting how the emerging theory will be affected by different variations of the constructs by trying to “tease out the key variations (dimensions)” (Lindlof & Taylor, 2011, p. 252). This process was particularly important for building a foundation on which researchers could continue to build out the way-finding framework/theory from the work done by previous researchers (Pearson & Kosicki, 2017) and guide future researchers in the direction of what needs to be done to continue understanding this new theory.

Researcher’s Background and Biases

In many ways, the researcher serves as the instrument to collect data collection when employing qualitative methods. Due to this aspect of qualitative research, it is important to acknowledge any personal biases that inherently have an influence on the data collected. Jill Manning (2006) stated that “acknowledging biases assist those in reading and interpreting data, as well as those who attempt to replicate the study by clarifying the context wherein the data were collected, as well as the lens through which it was reviewed and interpreted” (p. 37). Thus,

reflecting upon these biases is helpful not only for future investigations, but also in creating reflexivity for this work and the researcher's personal perspectives.

The author was born and lived in Salt Lake City, Utah for the majority of his life. Starting in high school, the author was involved in journalism and ultimately graduated from Brigham Young University with a Bachelor of Arts in Communications, emphasizing in journalism. This involvement has led the researcher to hold journalism and its role in society in high regards and importance. Additionally, the author has worked most of his professional life in the digital marketing field. This has given him intimate knowledge with using email, social media, search engines, and websites as a fundamental communicate tool for business. They allow communication with targeted audiences to help organizations achieve their goals. This knowledge was particularly influential in the creation and design of the interview guide as well as any of the follow-up questions asked to participants. Therefore, the way-finding systems examined in this thesis were largely based on the popular channels of communication used by the public and professionals.

Finally, the author falls into the millennial generational cohort and has a fundamental understanding of algorithms and their roles in providing information online. Having grown up during the age of the internet, many of these systems and behaviors discovered in this study acted as a reflection of his own personal behaviors when online. Pairing this inherent knowledge of internet way-finding systems, an intimate understanding of how digital marketers and advertisers use these systems, as well as the social implications of the internet and its effects on content creation and news dissemination, readers will have the ability to see how the results were interpreted and why the subsequent ramifications illustrated herein were drawn in such a manner.

Results

As is true with grounded theory research, the theory emerges from the patterns and themes established by the data (Lindlof & Taylor, 2011). During the open coding and axial coding process, three primary themes—or pillars—emerged from the data. The three pillars of way-finding theory found were: the user’s mindset when accessing the way-finding systems, the general perceptions of popular way-finding systems, and the information personalization process. These three themes are the basis to insights participants given in the results and help explain way-finding in greater depth (see Figure 4 for a visual representation of way-finding). All the subsequent codes found during the open coding process fit under one of these three categories. The results of each category and subcategory will provide insight into how way-finding theory was developed via grounded theory. The results related to the first pillar of way-finding theory, user behavior online, and related subcategories will be reported immediately. The results regarding second pillar, perceptions of how way-finding systems function and the third pillar, perceptions of the information personalization process, and their subcategories will be discussed in sequence.

Understanding the User’s Mindset

The first pattern that emerged during data analysis was how the user’s mindset impacted their online interactions with way-finding systems. Both active and passive users were discovered, and users could change between passive and active states depending on the devices they used and the likelihood that they would elaborate on a topic. Understanding each user’s mindset was primary to establishing their perceptions of way-finding systems and information personalization. This was a fundamental finding and corroborated Pearson and Kosicki’s claims

that way-finding is both an active and passive process (2017). The following sections are all subcategories related to understanding the user's mindset.

How the device used influences user interactions with way-finding systems. The device used to access the internet played a significant role in influencing the mindsets of internet users. This affected their perception of the digital way-finding systems they used. One participant, Professional 3, described this by saying:

I have a smartphone. I use that a lot, but I also use my laptop computer a lot as well. It depends on . . . how I want to use or get connected with the internet. If I'm going to do intensive research or really kind of dive into a topic, generally what will end up happening is I might do some cursory stuff on my phone, but then move to my computer where I can then sit down and organize my thoughts and the information I get.

This sentiment was repeated by most interviewees. A pattern quickly emerged explaining that the device used by the individual influenced their mindset and behavior.

Participants' behavior on way-finding systems changed depending on the device they used. Regarding this change in behavior, Student 2 said, "[My behavior] is very different. I'm on [my smartphone] for minimal time and then I'm like, this is frustrating, and I'll get off and do it on my on my computer." When asked why they found using the internet on their phone frustrating, they said, "I don't know. It's not as easy... [M]aybe I have this mentality if I'm stuck on my phone, I should be doing other things. Whereas if I'm on my laptop, I'm being productive, even if I'm not." For this student, accessing information on their phone was not a productive process and generally seen as something they do when wasting time. Commitment to digging through information on smartphones is low and therefore creates a more passive experience.

Users perceived their phones as devices that allowed them to function in two ways: first, as a tool to quickly access information on the internet without having to dig too deep into whether the information is true or false; and second, it is a device that allows them access to platforms of entertainment/interpersonal communication. Professional 3 stated:

For quick queries and lookups, the phone obviously is pretty convenient no matter where you are. I also have an iPad that I use when I just am tired of the small screen experience and tapping on my phone. But even then, what I would do on my iPad is more or less what I would do on my phone.

Smartphones are important tools in the digital age for individuals, but their functionality limits an individual's ability to elaborate on an issue. The research found that individuals tend to use a computer when they wish to research a subject with any depth.

When asked about how they use search engines on their phone, one participant, Professional 1, talked about using their phone for basic informational searches. They stated:

I would probably open up Safari on my phone. I'll just type in the person's name or a question, and then I'll just basically tap on the first thing that comes up.

Probably more often than not, I'm more likely to also tap on a Wikipedia page because I feel like that's more fleshed out. It has more information and it's easily accessible, and so I can get it quicker.

When individuals are on their phones, they are looking for information that is easy to access; they want to answer their questions quickly. Because of this mindset, users were observed to employ several heuristic behaviors when looking for information online quickly. These specific behaviors will be examined later in this section.

Student 8 also shared thoughts on using the internet on their phone. They eliminated social media apps from their phone because it was too distracting. Student 8 said:

I deleted all my social media platforms like two weeks ago. I was watching this TED Talk by Cal Newport and he was basically saying your phone is this slot machine that's always there and it's fragmenting your concentration. I think that's how I was using it. I didn't ever post anything; I would just use it as a distraction to not have to face harder things.

The mindset illustrated by this comment and others, highlights an important understanding of how smartphones impact the user's perception of way-finding systems. Because the phone creates a more passive experience, individuals are more likely to use it for entertainment and passing time.

In contrast, computers give individuals the ability to navigate way-finding systems more easily, allowing them to dig deeper into subjects and creating a more active mindset for users. This active mindset allows users to rely on critical thinking rather than heuristics. One participant, Professional 3, gave this example of how they conduct in-depth research online:

For instance, maybe I'm on my phone. I see something on Twitter like a story from the New York Times. I might pull it up and read part of it on my phone. But if it's something that I want to know more about or if it's something that I don't quite understand the full context of this issue, what I'll do is I'll get on my computer and I'll pull up that article. I'll read the article. Then I'll also look for similar outlets talking on the same issue... If I need to know more, I'll do an internet search, like a Google search. Typically, I'll find a Wikipedia page just to kind of get broad kind of top-down information. Then I try to get the smaller details from the stories that I read.

Searching for information, as illustrated by Professional 3, was a common theme among participants when describing their internet use on a computer. The comments exemplified how way-finding systems are used actively and how computers fostered the active mindset among users.

Furthermore, the differences between behavior on computers versus behavior on a smartphone were stark. These differences were summarized nicely by Professional 6. They said:

When I'm on the computer, it's generally more: "I need this purpose" and this thing. We talked about multiple sources, really good information, like . . . if I'm gonna do that, it's generally gonna be on the computer so that I can really kind of document it. I go on the computer for a purpose and searching for information. I might go on my phone to search for information, like, for the café or whatever. But it's generally more casual or kind of an afterthought. Whereas on the computer, it's more purpose driven.

Many other individuals spoke on these issues and had similar comments. The key finding was that users will behave differently depending on the device used to access digital way-finding systems. Depending on the device used, individuals were more likely to actively or passively engage with way-finding systems online. Laptops and desktop computers lend themselves well for deeper research, whereas smartphones lend themselves to be used superficially—an example of this is illustrated in Figure 1. This relates to the next subcategory: the ELM.

How the ELM embodies how users process information online. As established in the previous section, the device individuals used to access digital way-finding systems greatly influenced the mindset of a user and their likelihood to elaborate on information. Professional 3 illustrated this concept, stating, "If I'm really interested in something, then I'm going to do it on a device that's catered more specifically to that interest or allows me greater control and

organization...” This sentiment was shared repeatedly by study participants. The salience of a topic was as important of an indicator of elaboration likelihood as knowing which device was being used.

Several factors were found which acted as predictors of an active or passive mindset, ultimately indicating which processing route was being used. Time and ability to navigate relevant information seemed to be two factors that determined whether an individual would use central or peripheral route processing. The perceived social salience associated with a topic was also found to indicate whether an individual would use the central route or not (See Figure 2).

Student 2, expressed what information was most important to them:

Honestly, I'm probably looking for big events. Like big things that happened. I like to know if there was a tsunami or an earthquake or any type of natural disaster that affected a lot of people or if Trump gets kicked out of office, Brexit, and all that stuff that's going on there. Just the big stuff.

The more relevant a subject to an individual's life, the more likely they are to use central processing. The personal importance of a topic is an indicator that individuals will use the central route when processing information.

Ultimately, the device used impacts the level of commitment that an individual will give to an issue. This primes the likelihood they will elaborate on an issue further using central route processing or simply use heuristics to accept the information given to them by a way-finding system. This leads us to the final subcategory relating to understanding the user's mindset: media literacy and establishing source credibility.

Media literacy and credibility is influenced by ELM processing route in use.

Individuals' perceptions of what information was credible varied greatly depending on what

processing route they used. The researcher found various media literacy behaviors used by individuals to determine source credibility. These online behaviors were grouped into two categories: central or peripheral route tactics. As per the ELM, central route tactics are those behaviors used when individuals have a high likelihood of elaboration; whereas, peripheral route tactics are those used by individuals with a low likelihood of elaboration. Individuals used peripheral tactics more when they were describing their internet use on mobile devices. In contrast, they perceived themselves to use more central route tactics when they were on a computer. The researcher will only discuss the tactics used by most participants. An exhaustive list can be found in Table 5 and Table 6. Each tactic is examined separately, although it is important to note that many of these tactics work in tandem when individuals are using the digital way-finding systems.

Heuristic behaviors indicating individuals are using peripheral processing. In the ELM, the peripheral route is characterized as the processing route an individual takes to ascertain the credibility of a source based on heuristics. This is directly applicable to the discovered digital behaviors regarding way-finding systems. The following sections are popular heuristics that individuals cited. In this context, heuristics are defined as mental shortcuts that individuals use to quickly determine whether or not to accept or reject a piece of information found online. For a full list of the discovered peripheral route processing techniques, see Table 5.

Relying on thought leaders as an indicator of peripheral route processing. Digital thought leaders have increased in prevalence over the years. Many people use thought leaders to inform them about various topics. Several of the participants spoke about thought leadership as a source of credible information. An example of this was given by Student 5, who spoke about

getting information from an Instagram user who has a segment that they post every day entitled “A Minute with Mads”. Their statements are as follows:

Interviewer: Now, with the Minute with Mads, you said, you think she does a good job at posting headlines that are relevant to you?

Student 5: They’re just relevant in general. Which should be relevant to me.

Interviewer: And how often do you then go look up something else after you see one of her posts or whatever?

Student 5: Not too much. I don’t usually look it up after that unless I think it’s super interesting, and I have a conversation with [my husband] about it, and that’s when we together look it up.

This student regarded the information provided them by this thought leader as generally relevant and therefore, relevant to them. They based accepted the information without question because of who the information was coming from.

Thought leadership is built over time as the thought leader creates content that is deemed credible by their followers. As exemplified in student 5’s comments, individuals often do not fact check the information the thought leaders disseminate. Individuals rely on heuristics to determine the credibility of the information received from a thought leader. This includes what they know about the individual and whether they consider them to be credible. During the interview, Student 2 expressed that they gave less credence to thought leaders who they did not like, whereas Student 5 enjoyed the content of the thought leader and felt that the information was relevant to everyone. Both cases illustrate how heuristics are used to quickly determine the credibility of the information based on their opinion of the thought leader.

Relying on sponsored links as an indicator of peripheral route processing. Sponsored links received mixed reviews from the participants. Many stated that they would never click on a sponsored link. One comment summarized the general sentiment users had towards sponsored links. Student 4 stated:

Because it's being paid, they're more likely to show up. In some way, they're relevant because some keyword triggered that to be a response. But, I do have a lot less trust that it's exactly what I'm looking for. I've had things that are sponsored, like, Target specifically. You get Target ads all the time or sponsored links, and they say, find exactly what you searched for here at Target. And I click on it and they don't have that thing. They have things that are sort of similar, but they don't have the exact thing I was looking for and it annoys me.

The fact that the links were bought and paid for seemed to be the largest influencing factor that affected the perception for most individuals. This heuristic device was not well received among most participants and they dismissed the information because they knew it was paid for, not because the links were not relevant.

A few participants did not have issues with clicking on sponsored links. Convenience seems to be the biggest determining factor for those who are willing to click on the sponsored link. Professional 1 said, "Sometimes you can see the sponsored ads, and then if it was like one of the first few in the results, then it's like, 'Well, the same exact company name is just a few spaces higher in the sponsored area, so why not click on it there?'" This relates back to the idea that users, many times, are looking for quick answers and therefore invite anything that makes their ability to reach information faster.

Ultimately, whether for or against clicking on sponsored links, it appears that heuristics influence the decision to use this tactic when looking for information on a search engine. On one hand, knowing that the search engine was paid to have the link there made individuals leery of clicking on the link even if it was the same as an organic link below. On the other hand, convenience was what most likely drove other individuals to accept the sponsored link without questioning ulterior motives. In both cases, heuristics were used to determine the validity of the information associated with the links.

Relying on URL appearance as an indicator of peripheral route processing. Another heuristic device that was used by participants was evaluating the website link's URL. Specific suffixes were deemed more credible than others. Student 2 exemplified this in this statement:

Gov is the most [credible]. Edu is probably second. Oh, I guess org's in there. Those three are up in the top: edu, gov, and org. Com and then I don't know what else there is, I know there are other, net, dot net. That's probably down at the bottom. Any reason? No. It's a cheaper link, but maybe that's why? I don't know.

Different individuals hold different suffixes in higher regards. Using this heuristic device is an example of peripheral route processing.

Relying on website brand & reputation as an indicator of peripheral route processing. The reputation of the source is another important heuristic behavior used by the participants. Several individuals interviewed had very strong opinions on this matter. Professional 3 stated that large newspapers were more credible than other sources. They said:

For me, large publications like the New York Times, like the Washington Post, their existence is based upon their reputation. So, whether current politicians believe it or not, having journalistic integrity is super important among the journalism community. I mean,

I don't know if you remember when Dan Rather knowingly misreported something on CBS News. He was forced to resign from his lead anchor position from CBS News because of that.

When there are mistakes that are made, the New York Times or these other larger reputable outlets will issue updates or editor's correction, editor's notes to signify like, "Hey, we made a mistake in reporting and here's what we've changed in our story. It was originally this." So, to me, when people are willing to go out there and put their name on the line and they've done thorough investigative research talking with experts in the field...those are the kind of things to me that make the information reputable and trustworthy. It's because it's built upon weeks and sometimes months and months, maybe even years of research and investigation.

Relying on the reputation that these organizations have as top-tier news organizations is an example of using peripheral route processing. Therefore, their reputation and organizational credibility act as a heuristic device used to determine source credibility. This type of behavior is similar for any organization that is known as a leader in their industry or area of expertise.

Relying on search engine optimization an indicator of peripheral route processing.

Search Engine Optimization (SEO) is the process of creating content that is easily found by search engines. For this study's purpose, SEO refers to the order in which sources are placed on the Search Engine Results Page (SERPs). Individuals who click on the first link given on a SERP are relying on SEO and the search engine's algorithm to determine what is credible information.

Professional 3 gave an insightful statement regarding SEO:

So, in terms of algorithms. Google's algorithm, that's its own search thing. I think it's based more on providing information that's relevant to what you're looking for versus

like Facebook's "Well, you've liked these things." I think Facebook is based on past behavior. That doesn't say Google isn't in the search results, but Google often is designed to give you information about what you're looking for at that moment.

SEO is a process the search engine uses to provide users with the most relevant content related to a user's search. Therefore, theoretically, the most relevant content will appear at the top of the results. However, advertising and marketing professionals spend much time creating content specifically to reach the top spots on a SERP. This means the content at the top of the search results may or may not be the most relevant to a user's search parameters.

One final comment summarizes how SEO functions as a heuristic device for internet users. Professional 6 said, "If it's not on the first page, I don't touch it. I feel like if Google does a good enough job gatekeeping and filtering out things, that if they're not on the first page, then they're not going to be really worth it." During peripheral route processing, individuals are more likely to click on the top result of a SERP. SEO has an important role when individuals are looking for quick information because it ultimately determines what information is presented to users.

Elaborative behaviors that indicate individuals are using central processing. The Central Route in the ELM states that an individual is more likely to look at the logic of an argument than rely on heuristics to form an opinion. The following tactics are the most common central route processing tactics that were discovered during participants' interviews. Among these tactics were link clicking, rephrasing search parameters, page diving, triangulation, and checking primary sources; each will be discussed in this section. For a full list of the central route behaviors and indicators, see Table 6.

Link clicking as an indicator of central route processing. Hyperlinks are a fundamental part of the internet. They help way-finding systems provide information to internet users. Clicking hyperlinks to find sources is what the researcher refers to as “link clicking”. Clicking links in and of itself is not an indicator of central route processing; but, certain types of link clicking can be. One such link clicking behavior is opening several links at a time to corroborate information via multiple sources. One participant, student 1, stated:

I do a lot of digging within links, within links, within links. So, when an article is published, it's like, okay this is great, this is interesting. If there's something that stood out to me, I'll go, and I'll review where that source was cited. I'll go down the sites wherever they found it, looking, get into that, read it, evaluate its credibility based off who wrote it, where it's published, why was it published? [What's] the vein that it's coming through, and then I'll dig in deeper from that, okay where did they get their information? And if it's credible, adds up, and it brings a cohesive story, you can judge whether you can deem it credible or not.

This type of link clicking is motivated by understanding the arguments of an issue better. An individual is more likely to engage in this behavior when an issue is important to them and they want to understand the issue in depth. In these instances, their likelihood of elaboration is high and leads to central route processing.

Another illustration of this type of extensive link clicking behavior was expressed by Professional 4, they stated:

I am constantly doing the motion right here: I'm right clicking to another tab. I'm opening tabs as I find links in what I'm reading if it is also related or interesting too. And sometimes it gets way off and then I have like 20 tabs. But then I have to read all of them.

Both individuals expressed a strong inclination towards learning and understanding a topic based on the facts. They open as many sources as they deem relevant to the subject they are researching. This indicates they are interested in the logic or validity of the arguments rather than who is saying something about a subject.

Rephrasing search parameters as an indicator of central route processing. The next two sections explain two actions that act as indicators of central route processing. The first is rephrasing the search parameters in a search engine and the second is what the researcher is calling “Page Diving.” This section focuses specifically on rephrasing search parameters.

Rephrasing search parameters indicates the individual is seeking specific information. When the first search does not yield the desired results, many will rephrase the terms they use to find the information they are looking for. One participant, Professional 2, stated, “[E]very once in a while I have to juggle words around and find out, because sometimes it’s like, “Oh, okay, let’s be a little more specific. Clearly, that’s not what I’m looking for.” “Changing the phrasing used in the search bar allows individuals to home in on the specific results they are looking for.

Search engines are limited in their ability to provide answers based on keywords provided in the search bar. Therefore, the search engine’s ability to provide the desired results depends on the individual’s ability to accurately describe the information they want. An example of this was given by Profession 6, they said, “Yeah, I’d change search terms, try to search a little bit better, make sure I’m using Boolean logic.” Boolean logic is the “language” that search engines are built around. As such, the results provided by the search engine will depend on the user’s savviness and how they use keywords to describe the information they desire to find.

“Page diving” as an indicator of central route processing. Page diving is the term the researcher coined for individuals who look for information beyond the first SERP. The

researcher observed how many individuals who were looking for specific information would dig through multiple SERPs to find the information they were looking for—much like divers who swim deeper and deeper into water to find a pearl or other precious treasure. Hence, the researcher coined the term page diving because of the similitude of individuals “diving” through SERPs to find the “pearl” of information they were looking for.

Student 1 gave rationale for when they use page diving rather than rephrasing search parameters:

It depends if I felt like how warm I was feeling about it. If it was like maybe another page, it was like this is kind of close, yeah, sometimes I'll dig into a third. If it's like not even close to what I'm looking for I will probably rephrase my search.

Depending on the user's perception of the relatability of the sources provided by the search engine to their query, they determined to dive deeper into the pages of results or re-search for the information.

Other reasons for using page diving existed. Professional 4 gave another reason when they stated:

I'm kind of like an information maniac and so I am the psycho that goes through like three Os of Google. I don't stop at the first page because . . . what I do is I look for sources and that's how you decide what to click on it and if it's something that I know is good, then I'll open, you know, four different tabs and then go back and read all of them.

Relating back to the ELM, this individual obviously has a high level of need for cognition, which can be an indicator of high elaboration and central route processing (Cacioppo, Petty, Feinstein, & Jarvis, 1996, pp. 229–231). Connecting this with way-finding theory, this individual is

actively using way-finding systems to discover the information they were looking for via central route processing.

Another interviewee gave a good explanation of what this evaluation process looks like for them. Professional 3 stated:

The order doesn't really matter to me on the screen. I know psychologically and statistically speaking, it does matter. And yeah, because I start from the top. But I'm not opposed to clicking down and going to the second page if I have to because I really want to make sure that I'm finding the right information.

Page diving is elaborative and has specific goals. Individuals who engage in page diving are most likely actively looking for specific information, and therefore, willing to take more time to find the exact information they want. Most page divers use discretion when deciding to click on a link because they are looking for something specific.

Source triangulation as an indicator of central route processing. Another common central route processing tactic discovered is corroborating information using multiple sources—or source triangulation. This was one of the most common tactics cited by individuals to find credible information. One instance of triangulation was found in Professional 5's comments, saying, "I try to find more than one source that says the same thing. And then it feels more secure to me. It's like, 'Okay, this is like a known thing.' Or 'multiple people think the same way.'" This process is a form of triangulation. As individuals look for multiple sources citing the same information, they feel secure knowing that various actors are reporting the same information. Student 2 also felt this way saying, "If I really wanted to dive down and verify 100% that I feel comfortable, that this is actually true, I would want to find multiple sources that say the same thing." Similar comments were made by almost every participant. If an individual

is processing information via the central route, they will most likely employ source triangulation to determine the validity of information.

Checking primary sources cited as an indicator of central route processing. In conjunction with source triangulation, checking primary sources cited in an article, video, etc. was another indicator that an individual was processing information using the central route. This can be as simple as practicing link clicking; however, sometimes it isn't as simple when sources remain unlinked. One participant, Student 1, stated:

[S]ometimes I'm reading something and I'm like, "Oh I actually want to learn more about that." So I will click that person, whoever the source is coming from, click them, click the article if they reference it, if not I will go to a source I know that they have used before to cite their work, because for the most part, I can assume that is pretty reliable source they got their information from. I'll search their archives to see if they have anything written about that issue, and then from there start my search...but, then I will start my digging from there.

If an individual is determined to discover the primary source of information, there are other ways to finding that information. Student one clearly indicates they are using central route processing in their process outlined above.

Another professional cited that they look for scientific data. Professional 5 said, "We look for things from the government, and from data, and scientific reporting and that kind of stuff." Scientific journals and governmental agencies are generally the sources of primary research. They hold more credibility because of the stringent requirements in place for publication in those fields. Student 8 had similar thoughts:

I think where it's coming from is a huge thing. So, for example, when I was in high school, I would just go for health information. I would go to blogs and websites geared towards teenagers. I would take that as gospel fact, but now I know there's Google Scholar. There are journals and stuff you can go to that are more credible than some of the stuff that's been taken from different sources and then gone down the line until it's stripped down or not necessarily correct.

Primary sources were generally seen as more credible among participants. This removes any misrepresentation or bias that could be reflected in a third-party blog post or news organization.

Another individual spoke about checking sources cited in the following anecdote.

Professional 7 stated:

I think something I [do], if a paper made a claim, and then sourced it, I would try to go to that source and see what they actually said. At my work there was actually a statistic that we used all the time. . . . I didn't really think much of it, but then one day I went to the source, and read the actual statistic, and there was a caveat that changed the number.

[B]asically, I went to the original source, the original paper that showed the actual data, and that helped me determine what was true.

As individuals' interest is piqued, they are more likely to search out the primary source of information to determine for themselves whether they agree or disagree with the information.

In summary, these tactics—both those associated with the peripheral and central routes—provide key insight into understanding the mindset that internet users have when using the way-finding systems that exist on the internet. Understanding these tactics, their connection to the ELM, and the devices they are using and its effect on the perceptions of the individual using the

way-finding systems online will act as the lens through which the way-finding systems will be examined in the next section.

Perceptions of Popular Way-Finding Systems Uses

The second pillar of way-finding theory that emerged from the data was the general perceptions regarding the usefulness of popular way-finding systems. Three specific way-finding categories were analyzed by the researcher: social media, search engines, and email. Social media and search engines were chosen because of their integral role in disseminating information among internet users (Pearson & Kosicki, 2017), while email was chosen because of its ubiquity among almost all internet users (Purcell, 2011). Each way-finding system will be a subcategory and discussed in the following subsections.

Email uses as a way-finding system. The users' perceptions of email as a way-finding system will be the first category discussed. By understanding how individuals view email, it sheds light on how they used it as a way-finding system. This section focuses on the perceptions and intricacies of email as a way-finding system; several perceived functions of email emerged from the data. The functions coalesced into three groups: direct communication, information organization, and signing up for other internet services. Direct communication was any information shared from one party to another. Information organization explores how individuals use email to find and organize information. Finally, using email as a key to unlock other services on the internet was another common function. Each subcategory will be explored.

Direct communication: a way to share information via email. One of the fundamental functions of email is the ability for individuals to communicate with one another despite space and time. The most common uses for this direct communication tool was sharing information between individuals or organizations. Most email communication was work or school related.

According to the interviews, individuals tend to communicate more formally via email.

Professional 1 described email as such, “I do feel like email is a lot more functional. I get notices from my bank or just . . . I feel like it’s to stay connected with people and important things that I need to be on top of.” This sentiment was shared generally across all participants interviewed.

Email also was perceived as the best tool to communicate large amounts of information between individuals. Student 1 shared a story of how email was able to help them get caught up quickly in a new position at work. A co-worker was able to use the forwarding function to send him important information to help him be successful. Student 1 said:

So, him being able to forward me the emails that he received was great, and then to take that a step further, I was able to reach out to the people who were hosting this event and say, “Hey listen, there’s been a lot of changes, I’m the new guy. Can you send me all the information you have?” And within the day, I had the materials that I needed. I could be able to organize, get caught up to speed with everything I needed to because of that.

Email facilitates sharing large amounts of information effortlessly between two parties. This is an important function of this way-finding system. Emails between two individuals who know each other are generally perceived as more important and therefore taken more seriously; whereas emails from organizations for promotional purposes were not prioritized.

Promotional emails were not a high priority for individuals interviewed. Participants generally relied on heuristics to determine what emails were important enough to open and which ones to just ignore or delete. Subject lines were the most common heuristic device used by individuals to determine whether to open a promotional email or not. Student 3 commented:

If it’s from a store, I just look at the subject heading, and then from my home screen, on my phone, I will either delete it or look at it. So, I just kind of briefly glance at it to see if

it interests me, but if it's from someone that I know I should read, I definitely pay good attention to it. I just look at the sender, and then I look at the subject line.

This was a common sentiment across the interviewees. All the participants used a similar process to determine what promotional emails would be opened or ignored.

Information organization: email giving structure to sharing information. Several practices were used by participants to organize information in their email. The most common was subscribing or unsubscribing from email lists. This allowed the individuals to filter the information in their inbox. Unsubscribing was a way individuals could personalize the content they received in their inbox and is a heuristic tool specific to this way-finding system. This was mostly applicable to unsolicited promotional emails but was also used for emails individuals had purposefully subscribed to but no longer wished to receive.

The next most common organization practice was treating their primary inbox as a to-do list. One individual, Student 4, stated:

I open [emails] as soon as I can. So, I kind of use it as a to-do list almost. So, I open them and read them. If it's something I have to do, I mark them as unread so that it bothers me. Cause [sic] it does bother me a lot, but I do that so that I know it's still pressing. I want to get them out of the way. I want to get them read or deleted. That way if I make them unread, I actually do something about it.

This was a practice that individuals used that led to central route processing. Using the inbox as a to-do list helped the individuals prioritize the information they received and assured they acted accordingly.

Signing up for other internet services: a way to access other tools and information. An email address allows for more than just communication between two parties. A benefit that is not

related to the communication function of email is it allowed individuals to sign up for third-party services. The information, tools, or promotions gained from these third-party services would be inaccessible otherwise. Student 1 said, "I think my most recent sign up where I used my email was to get free shipping on something." By doing this, businesses can gather email addresses to use for promotional email advertising. Each party gets something of value in return: the user a tool or specific service they desire, and the organization can create a pool of potential customers for the paid services they offer.

Email marketing is an important aspect related to this feature. Regarding email marketing and what practices generally work best to get people to read sent emails, Professional 5 stated:

Some kind of sale, coupon campaign, freebie. I mean that's what gets people because people don't want to pay full price for anything. So yeah, as far as email campaigns go, anything that can grab them with, I mean it can be like 2 dollars off your shipping. But that grabs them enough to actually read the email.

By offering something in return, i.e. free shipping, coupons, free tools, etc., businesses can generate leads for future sales. Other professionals stated that sharing these deals in a subject line was the most successful way to get individuals to pay attention to an email. Incentives are heuristic tools, from a communications perspective, to help persuade individuals to pay attention to their content when the users are processing information via the peripheral route.

In summary, email as a way-finding system facilitates direct communication via the central processing route for information shared between friends, family, and coworkers.

Promotional content is generally processed via the peripheral route using heuristic devices to determine what information should be attended to or ignored. Email functions particularly well

between two or more known individuals; however, it is not as effective for commercial entities trying to market and advertise.

Social media uses as way-finding systems. The prevalence of social media in the digital age is unquestionable. Billions of people use these way-finding systems across the world. Therefore, understanding people's perceptions of social media and how they obtain information via each platform is important. This study sheds light on both the individuals' perceptions of social media and its ability to provide them with credible information. This section will discuss the perceptions of social media generally, followed by discussing major social platforms individually. Specifically, Facebook, Instagram, Twitter, and YouTube were most cited by participants. Other platforms like LinkedIn, Reddit, Tumblr, Pinterest, and Snapchat will not be discussed because of the limited number of comments by participants specifically regarding those platforms.

General perceptions of social media. Social media has allowed individuals to stay connected regardless of location. Many of the participants touched on how they could stay in contact with friends they made in other parts of the world or from their past. When discussing who they follow on social media, Student 4 said, "People in high school that, in real life, I would never talk to them, but I just want to see what they're doing with their life. Or mostly, I go looking to see if anyone else is engaged or getting married or having a baby or whatever." Staying connected with friends and family was found to be a central aspect of social media.

Participants also acknowledged several drawbacks to social media. One participant, Student 1, said, "Social media, I think, is a double-edged sword. I know there's a lot of good things, but I think now, people become more obsessed with it." One of the pitfalls of social media cited by another participant regarded authenticity. Professional 1 said, "Some people, I

think, try to be accurate and authentic, but I definitely think there are others who try to portray a very specific image that they want people to see.” This goes hand in hand with comments made by Student 1 regarding social media’s ability to provide good information on controversial issues. They said:

You can get caught up on issues that are being talked about right now. Legalization of marijuana, the border, immigration policy, healthcare, foreign policy, whatever. You can get caught up and like have a very superficial base understanding of it, but when it comes down the nitty gritty, I think there needs to be more accessibility to that material.

From the perception of those interviewed, social media generally seemed to be a very superficial way-finding system. Some platforms act as way-finding systems that allow for more depth of information, but collectively, social media are passive way-finding platforms.

The perception that social media are shallow may be because social media are mostly accessed by smartphone. As previously discussed, smartphones seem to place individuals in a passive state of mind which lends itself to peripheral route processing of information. One physical manifestation of this passive, peripheral route processing is what individuals cited as “mindless scrolling” or satiating boredom by scrolling through their social media feeds. Professional 1 stated, “I think when I’m scrolling in through Facebook, it’s mostly wanting updates on people’s lives and honestly, I think it’s out of just being bored and it’s a habit, I think, too.” This sentiment was shared by several other participants.

Facebook’s uses as a way-finding system. Facebook is by far the largest social media platform in the world. It has an estimated 2.5 billion users worldwide who use the platform monthly (Facebook, 2018). Therefore, Facebook has an important role in disseminating information. Every participant in this study had a Facebook account; however, it was not the

most actively used social media platform. Understanding how individuals perceive the platform will help researchers understand how it functions as a way-finding system.

Everyone perceived the utility of Facebook differently. Generally, people use this platform is to stay in touch with family and friends. This was illustrated by Student 7; they said, “[Facebook is] a database of friend information. In all honesty, if I’m trying to find someone, I do that. It’s just a way to stay connected.” Another individual, Student 2, said they use Facebook to stay on top of life events. They said, “Big events. . . So, somebody got engaged. Pictures of people I actually know and actually care about. Sometimes a birthday will be intriguing enough that I will use that to text [them]...” Additionally, several of the younger participants stated that it was the only way to stay in touch with older family members who don’t use other social platforms. Student 3 stated:

I just recently got a Facebook, I never really had one in high school because no one really used it. I mostly just have friended my family members. A few friends, but mostly family members because a lot of my older cousins and my aunts and uncles don’t have other social media, and so that’s kind of the way I get to see their posts and their kids and their activities and things like that.

Facebook is perceived to facilitate the connecting of individuals to friends and family and providing users updates on their lives. For those interviewed, the success of this function largely depended on Facebook’s newsfeed algorithm, which will be discussed later.

The next most common use of Facebook was to connect with other individuals via Facebook Groups. This function of Facebook allows users to find information based on a shared characteristic. One example of this was from Professional 2, they shared that Facebook Groups

functioned as a tool to improve their professional capabilities through collaborating with other professionals. They stated:

[W]hat's really cool is on my personal Facebook I'm a member of the NAR communications director page. And so, if I'm ever like, "hey, we're thinking of doing a new member email campaign, think we can do that?" And they're able to go, "yeah, like here's what works well, here's what doesn't, blah, blah, blah, blah." It's a really cool place to get information on what has been successful and what hasn't.

This is one example of professionals in the same industry drawing upon each other's knowledge and previous experience. These groups facilitate the communication of several individuals who have never met, yet they were able to lean on each other for success. Another individual, Professional 7, used Facebook groups to find qualified host families for the student study abroad program they run. These groups functioned as lead generators in the early stages of their business. Before Facebook, this process would have been more difficult. Overall, Facebook groups help focus the communication of those pertaining to the group around a specific topic or cause. This helps facilitate central route processing for Facebook users.

Another perception of the use of Facebook as a way-finding system was to see what businesses and organizations were doing. Professional 3 stated, "What I use Facebook for the most, it's not really to keep up with friends. It's like to figure out what or see what the companies and the brands and the organizations that I follow, what they're sharing." This was also illustrated from the industry side as well. Professional 4 used Facebook to target individuals who were interested in art to promote exhibits for the art museum they worked for. This created awareness for "events, exhibitions, openings and closings, and anytime we get any media coverage that goes on there as well to draw interest into exhibitions, sales at the store." A portion

of individuals on Facebook use it as a way-finding system that facilitates the dissemination of information from organizations to individual followers. This allows them to receive pertinent information and gain awareness of what different organizations are doing. Depending on the mindset of the user, following organizations can be both a central and peripheral route tool for processing information.

Several participants also shared their reservations about Facebook and its ability to act as a way-finding system. One participant, Professional 7, shared something they perceived as a negative aspect of Facebook. They said, “I don’t know, I feel like Facebook could be a little too intimate in some ways cause [sic] you can then see their whole profile and stuff.” Another interviewee, Student 4, stated, “I only see maybe like 10% of my friends on my newsfeed. It bothers me so I actually have to go to other people’s pages that I’m wondering about. Or try to think of who could I be wanting to see on my newsfeed? And I’ll go specifically search them.” As illustrated in these comments, several perceived drawbacks exist for Facebook as a way-finding system. Many of these perceived drawbacks for Facebook are directly related to its personalization algorithms and will be discussed in more depth in later sections. However, it is important to mention that these complaints are specifically oriented towards those who are passively using the platform and processing information via the peripheral route. As illustrated by Student 4’s comments, the platform still facilitates the ability to actively find information and process it via the central route.

Instagram’s uses as a way-finding system. For the participants interviewed in this study, Instagram was by far the most popular and most used social media platform. Because of the visual nature of this way-finding platform, most of the information sought on this platform was related to entertainment. Hobbies, friends & family, and travel were the top types of content that

participants spoke of related to Instagram. This content was shared through various existing platform functions; for a full list of those functions, see table 7. In this section, the primary Instagram feed, Instagram stories, hashtags, and the explore tab functions will be discussed further.

The main Instagram feed was most discussed by participants. All the accounts that users follow are curated by Instagram and presented to them in this feed. The top content that was referenced by participants in the interview process was hobbies. One example given of this was by Professional 5, they shared:

I've always been a very visual person because I've loved photography from the time I was eight years old. So, I just love looking at pictures. And for me, I just love seeing. I follow a lot of outdoor places. And I get my outdoor feed from it and go, "Oh, that's something I want to try. That's something I want to go do."

Another participant shared their opinion of Instagram; they stated:

This sounds very girlish, but I like to see pretty things. I feel like that's the great thing about Instagram in comparison to Facebook, I feel like the Facebook people can just share stuff, share stuff, share stuff. And I'm not necessarily following a person, I'm following something that they're sharing. Most of the times, it's just such stupid stuff.

But I feel like, generally, [on Instagram] I'm able to see really pretty images.

The aesthetics of images seems to be the major driving force on Instagram. Most individuals follow accounts based on the aesthetic appeal of the account and its content was related to their interests. In this case, the information being shared is not through text or words, but through the image and video. The aesthetic appeal of the image or video is a heuristic device individuals used to determine whether they would stop and read, or just keep scrolling through the content

presented to them. In general, the Instagram feed was a function that lead to peripheral route processing and passive use of this way-finding system.

The next most popular function of Instagram was Instagram stories. Several of the participants stated that they use the Instagram story function more than they do their own personal account. There were several reasons for this. Professional 1 stated:

[I]t's easy and I don't feel the pressure. I mean there is a little bit of pressure to make it like have the right hashtag, have the right mention, or have the right little phrase. But I do feel like it's more acceptable on Instagram story to have a candid video of you talking about an experience or something...

The Stories function of Instagram is perceived to have less pressure associated with producing aesthetically appealing, perfect content for those who use it. Because of this, Instagram Stories helps Instagram provide users with content that is perceived as more authentic.

One of the key reasons Instagram Stories is seen as more authentic is the temporary nature of the content shared via this function. Professional 6 stated, "I feel like someone's just kind of throwing something out to the universe that's not gonna [sic] be there very long... Like, I feel like stories, they're just ephemeral. They're brief...they're almost fleeting." This perception allows for individuals to post more frequently without breaking the unspoken rules of Instagram—that profiles are for perfect pictures and big events.

Instagram Stories have been beneficial to organizations as well. Professional 7 gave insight into how this function of Instagram helps their business. They stated:

It has people more aware of what I do, what the company does, and also more interested and engaged. I feel like since they added Stories, at least for me personally, I've noticed

the feed is less [important]. They may not see my post for a while, it might be far down scrolling... So, me having the Story, they'll see it more often.

In many ways, the conventions of Instagram created a gridlock situation for its users; because of the pressure to have the perfect post with the perfect hashtags and mentions included with a quippy remark, users hesitated to post frequently. However, now businesses, organizations, and individuals alike can post more frequently and see more of what the day to day is like. It can create more awareness and authenticity for both people and brands on this platform. The Instagram Stories function generally leads to peripheral route processing and passive use, though over time and through a concerted effort on the poster's part, those following the stories could move into the central route depending on their disposition towards the topics being discussed.

Hashtags were also an important function for Instagram. Hashtags are a digital cataloging system that exists across all social media platforms. In Instagram, hashtags function in a key role of curating content into categories based on specific hashtag used. One participant, Student 3, stated, "I used to do every post cause [sic] it was super popular to do that a while ago, now it's like occasionally if I think of a funny hashtag or if I want it to be associated with a certain event or something." Corroborating insight was given by Professional 6, who stated, "Occasionally I'll use it to find information, but more often than not, I would use a hashtag to be a part of [something]. Rather than to use it to look, I'm like, okay, I'm also part of this." Hashtags help the sharing and finding of information as depicted in Student 3 and Professional 6's comments.

Hashtags also allow Instagram users to create and build communities around any category they choose. Several individuals stated that they did use hashtags to build communities on this way-finding platform. Professional 4 stated:

[M]y sister and I started an Instagram book club a few months ago and we're using hashtags heavily and we are seeing people joining . . . like for one post we did, I did #StephenKing because it was a Stephen King quote and we got, all of a sudden, people who really liked reading horror books. They started following our account because I used a Hashtag.

By using a hashtag on their specific post, this individual was able to tap into an existing community on Instagram and promote their own content. This was similar for users who cited that they liked searching hashtags to find content of celebrities, travel accounts, and more. Because the curating ability hashtags have online, they facilitate central route processing. By clicking on the hashtag, individuals can search and find more content specific to the topic of interest.

The final Instagram function that is important to mention is the explore tab. On this page, content from public accounts across the world is shared with users based on personalization algorithms. The focus of this section will be on the users' perceptions of this aspect of Instagram, not the algorithmic personalization. Regarding the explore tab, Student 5 stated:

I usually just go on the explore page and I look at houses. So, I'm constantly looking at before and afters of living rooms, of kitchens, I just always look at the houses. That's all I do. Or, funny videos and me and my husband send them back and forth to each other. Or dogs.

For this participant, the explore tab was the main reason they used Instagram. It allows individuals to find new people and new content to follow.

The explore tab gives individuals access to content, people, and organizations they previously had no knowledge of. When speaking about the explore tab with Professional 7, they

stated, “Oh, people have found [my business] through that. Yeah, I don’t know how. I think a lot of it’s based on who you follow, like your followers, or the people who you follow, who they also follow? So, that’s how some people have discovered me through the Explorer thing.”

This example shows the impact this type of content curating can have for business. The explore tab facilitates content discovery and sharing across accounts on Instagram. However, when individuals use this function of Instagram, they are generally in a passive mindset and rely on heuristics to help them process information via the peripheral route. Because Instagram is so visual, aesthetically pleasing content helps capture the attention of individuals when they are passively scrolling through the explore tab.

Looking at these functions holistically, it is clear Instagram is a way-finding system which helps facilitate the flow of information from individuals and organizations to one another primarily through visual images. Most of the Instagram’s functions are geared towards capturing the attention of passive users, looking for aesthetically pleasing content. Individuals who look to disseminate information via this platform should consider heuristics, particularly aesthetic ones, to help promote their content to other users. If looking to specifically target users who are looking for content actively, hashtags that relate to those users could be used to get content in front of that audience.

Twitter’s uses as a way-finding system. Twitter was not as commonly used among those who were interviewed for this study—however, of those who actively used Twitter, it was often regarded as their favorite platform. Professional 3 had this to say about Twitter:

I use Twitter probably more than any of my apps or my social media services. I use that to see what the general conversation is about a number of topics that I follow. Then I

contribute to those topics. I follow a lot of sports; tech, like tech products and tech news; news in general, like politics and just constant hodgepodge things here and there.

Twitter is, for the most part, an open platform allowing individuals to communicate with anyone else on the platform. One opinion shared by Student 1 was that Twitter is the most “social” of all social media platforms. They said:

I feel like Twitter you have to be public. I mean it’s a platform where you are supposed to interact with other people, and that’s the way it’s designed is you really can—it’s probably the most social of these social platforms because you can interact with people and retweet and share their content regardless of region, regardless of proximity.

This allows Twitter users to engage with a variety of individuals, with differing opinions on a large spectrum of subjects. Because of this, Twitter facilitated more central route processing than any other social media platform. This is because of the open nature of the platform as well as several other key functions of the platform.

In addition to the public nature of Twitter, another key function of the platform is its fast-paced nature where the latest information is shared. Student 7 stated that they got a Twitter account for the sole purpose of staying up to date on industry trends in the computer science realm. They said:

I haven’t even set up my profile yet. One of my friends will say, he just got a Twitter, I’m like, “Really? That’s one thing that I’ve never really tried.” And it’s good just because I follow these certain things just to stay in the know. Trends in the industry. So that’s pretty much the only reason why I did that. I just downloaded it right then and then didn’t open the app. But it’s downloaded. That’s how I tend to use it, probably like, 40 people that I’m gonna follow.

Another more experienced user, Professional 3, stated, “Twitter, it’s kind of like these microbursts. [A] microblogging site is what they initially called it. So, if I’m looking for news, like breaking news, I come to Twitter.” Because of its reputation for sharing information in quick, short bursts, Twitter has been a haven for news distribution by traditional media outlets as well as everyday users. Individuals can share links about breaking news, latest trends, or current events with hundreds and thousands of other users.

Another aspect important to how individuals perceived Twitter’s usefulness as a way-finding system was link sharing. The act of sharing links was perceived as beneficial for active users who are processing information via the central route. Professional 3 said, “[I]t’s a lot of link sharing. So, I’ll come here and see what’s going on, and I’ll often click on links here to then read in other places.” There is a lot of link sharing and “threads” that occur in this way-finding system. It is a way for users to overcome the platform’s 140-character limit, which does not lend itself well to high-elaboration (this may be one of the reasons the limit was raised to 240 characters). However, this does not stop individuals from being persuasive or elaborating in 140 characters. Student 1 explained, “I mean you can convey such strong messages in 140 characters—which is insane to me—and you can change people’s perceptions.” Discussions that take place on the platform involve a lot of back and forth between the individuals discussing a topic online because of the character limit of each post. Link sharing, paired with well thought out posts, can lead to central route processing and high-elaboration levels for active users on this way-finding platform.

Not all the comments regarding Twitter were positive; there were some negative perceptions of the platform as well. Professional 4 stated:

I shut [my Twitter] down about a year ago because I hated the platform. I didn't like the content there . . . I was following more than my friends and it was more depressing and irritating and anger-provoking because there's so much homophobic, sexist, garbage on there that I don't need, so I shut mine down . . . I haven't been on it for over a year.

The public nature of the platform is a positive and negative aspect of the platform as shown by Professional 4's perception. The flow of information is more unbridled on Twitter than on Instagram or Facebook. Because of this, the information shared through this way-finding system may not reflect or fit with the user's personal beliefs. This may or may not be by design, but it is inherent the open nature of Twitter allows for more information to flow between individuals and organizations without the filtering that occurs on other common social platforms.

Another perceived drawback from a Twitter user was that it leads to consuming news based on heuristics. Student 1 stated:

I do get a lot of news, but the news there is something that I dig deep pretty into. You can post whatever on Twitter and if you're the right person, you've got that verified check mark, you'll get retweeted and you'll get a lot of people who adopt your ideology because of that because you are verified or whatever. And it leads to a lot of groupthink and a lot of headline reading.

Depending on the interest level of the user, information will be processed using the peripheral or central routes. As discussed in the media literacy section, the processing route used impacts the likelihood users will elaborate on a topic or just accept or discredit the information based on heuristics. The success of Twitter as a way-finding system is largely based on the processing route of its users.

YouTube's uses as a way-finding system. YouTube was often cited as a platform for educational information. Tutorials were the most common purpose for visiting the site. Additionally, political commentary and entertainment were also specifically mentioned as important forms of information that was consumed on YouTube. Student 2 said, "I don't like reading a ton. I learn way better watching, listening. Listening mostly." Another participant said similar things. Student 5 commented on their perceived generational differences in learning. They said,

So, my mom's a computer teacher. She teaches computer for elementary school kids, and she said the other day to me, she goes, "What do you do to get your information?". And I was like, "I don't know", and she goes, "Do you look it up, like how do you look it up?". And I'm like, "Yeah, usually I do a YouTube video". And for our parent's generation, they need to read steps, whereas us, we watch steps. And so, I definitely Google stuff, but there are so many steps I'm like, "Okay, I'm gonna go to a YouTube video." And I watch the video instead.

In the digital age and with the millennial generation, learning via visuals has become the norm. With social media sites like YouTube, how to videos have proliferated and thrived. Just as Student 5 said, the perception is that individuals who grew up with the internet in their lives are more likely to look for a tutorial video than read an article.

Another important note to make about YouTube videos is the quality of the visual images. On this platform, visuals are the heuristic queues that are used by individuals to determine whether they should watch a video. Student 2 stated, "I would pay more attention to well-developed, good videography, good graphics, good everything, way more than I will if somebody's standing at a whiteboard with bad audio." Audio-visual queues become much more

important on this platform than say on Twitter. Video length, position in search results, and the number of views were also cited as important tactics that individuals used to determine whether they should watch a video. This is important for passive YouTube users who are not looking for specific content on the site.

As far as news consumption is concerned, most of the participants did not turn to YouTube to find that type of content. Student 5, however, did comment that, together with their spouse, they would watch political videos on the platform. Another participant, Professional 6, discussed how they would get news via entertainers like Seth Rogan and Jimmy Fallon on the platform. It is possible that because this platform is mostly a one-way communications channel platform and not a didactic experience like other social media, that individuals do not look for news content on this platform unless it is in the form of entertainment.

YouTube as a way-finding channel facilitates both the central and peripheral routes of information processing. Heuristic devices such as length of a video, quality of audio-visuals, number of views, and search result positioning are all used on this platform. At the same time, YouTube also facilitates the ability for individuals to upload their personal beliefs and positions on any issue. This means that an individual, if they are interested and willing, may listen to any of these arguments and deduce their credibility based on the logic of the argument as well.

Search engines uses as a way-finding system. The final way-finding system explored was search engines. In this case, Google was the only search engine that was used by participants. The main function discussed by participants was finding relevant information to answer questions. Many of the source finding tactics were previously discussed in the media literacy and credibility section of this study and therefore will not be discussed here. Because of the integral role of algorithms in the search engine process, most perceptions of the platform

itself will be discussed in the next section. However, this section will briefly focus on the perceived benefits and drawbacks of search engines as shared by the individual participants in this study.

The general benefits cited by individuals were that Google does a great job of providing them with information that they are looking for generally. Professional 1 stated:

It's a variety, honestly, just like. . . . It could be just a question I have about like I said, a movie. I feel like I'll look up a director and an actor a lot after I see a movie. I use the internet today to look up where I buy a certain gift for Christmas.

The searches described by Professional 1 are examples of quick inquiries that do not have much debate or issue when looking at specific sources. For students, looking up specific tasks or topics were also regarded as a strong suit for Google. Student 6 said:

If it's a quick thing, like, I just want a really quick, basic answer, it definitely suits my needs. Looking up something for biology, "oh, I need to know something about mitosis," it'll just pull up like a diagram. Perfect for my needs.

This directly correlates to the heuristic devices that Google has put in place like sponsored links, SEO as discussed previously, and informational pull out boxes (see Table 5). The consensus was that Google is great at providing individuals with specific content that they are looking for when the topic is not open to too much interpretation.

However, the general perception individuals had when looking up controversial topics was that Google was not as good at providing them with the information they were looking for. Student 7 stated:

I feel like if you just typed in, I don't know, controversial topic, then it probably wouldn't be very great at knowing what you want, or a thing like that. It might show you, or you

type in a controversial person, then it's like, you're gonna see a bunch of . . . well, in my opinion, you'll probably see a bunch of liberal, left side opinions on the thing. And then you might see yours somewhere else or something. But who knows? The controversial things, it's just like, whatever article pops up first, pretty much. But who knows if that's actually gonna be what you want.

Another individual, Student 6, stated:

I feel like Google immediately doesn't pull up the most credible sources. They pull up the easiest, like Wikipedia, we'll give you the answer, basic, also easiest to understand. Like, I can only find super credible peer-reviewed research in databases. Looking through all the things that Google pulls up is really hard.

This is possibly because what is popular is not always what aligns with the political or social ideology of an individual. Therefore, the more controversy around a topic, the more likely it is an individual will not agree with the sources that are pulled. Depending on the political ideology of an individual, any given source that Google pulls up will be regarded as less credible if it is perceived to be from an opposing ideology. The personal beliefs of a user will determine which processing route they use to elaborate on the information. Political ideologies and previous interactions with sources may sour an individual towards an argument if they are processing information via the peripheral route, whereas, individuals who are processing information via the central route may be more likely to consider information or arguments that are different than their own and will determine their validity based on the logic of the argument.

Perceptions of Algorithmic Gatekeepers

The final pillar for way-finding theory that emerged from the data was the perceptions of algorithms—specifically those involved in the information personalization process. The

participants interviewed for this research study were generally unaware of the role that algorithms play in way-finding systems. This is an important discovery that will be discussed in further detail in the discussion section. The following section will discuss the comments made by participants regarding their personal perceptions of algorithms and the role they play in finding information online.

When asked about whether they were conscious of algorithms acting as gatekeepers, Professional 1 stated:

No, I don't think I'm conscious of that. I know it when I talk about it, but I don't think every time I get onto Facebook or Google . . . I don't think that. . . . It might be something I complain about, but it's just like a minor annoyance. I don't think I care enough to do anything about it.

Individuals who are passively scrolling through information on the various way-finding systems do not realize that information personalization is occurring. Most participants seemed to fit within the "I'm aware, but don't care" category.

However, two students who were computer science majors and work on writing code did seem to be more aware and conscious of algorithmic gatekeepers and their roles. One, student 7, said regarding personalization algorithms, "The thought of it doesn't creep me out at all. Like, I've taken classes that show exactly how they do all of those personality fitting type algorithms. So, I guess I understand a little bit about the limitations of it." Understanding the functionality of the algorithms gave these individuals more comfort and alleviated any concerns they might have regarding personalization. This could be because they understood the limitations of the algorithms, they had more control over the functionality of the way-finding systems and therefore relied less on the algorithmic gatekeepers to curate content for them.

These algorithms function at a crossroads between looking and providing. They look for what information individuals are seeking, while they try to predict and provide content to passive users. Professional 6 said, “I think it’s good, it creates a good experience.” These algorithms are an important part of the way-finding system’s ability to provide users with what they want without too much effort on the user’s part. This is perceived as a good thing, especially for passive users.

Each way-finding system has its own, specific algorithms designed to help users along the way-finding process. Some algorithms were perceived to be better than others. Facebook’s algorithms were the most negatively perceived among those interviewed. When asked about Facebook’s ability to predict and show them what information they wanted to see, Professional 5 said, “I feel like it shows me the same five people, and they’re not even the people that I really want to see stuff about. So, I don’t know why it’s gotten me confused.” Another individual, Student 4, had similar feelings. They said:

Not so much anymore. In the past, yes. Now it’s become very, I think their algorithms are too strong. Too polarized. I don’t know what you’d call it, but trying to focus in too hard that things [I] like. . . . I liked this one girl’s post like two times in a row or something.

And then I would get everything she ever posted. And I got sick of it, I don’t want to hear anything more about her life.

These comments highlight the difficulties associated with personalizing content. Facebook is perceived to not provide a wide enough range of content and focuses on too much on a few friends an individual is following. This shows that if way-finding systems are not able to accurately index and provide information for passive users, then way-finding systems may find themselves less useful to passive individuals, and ultimately less used. Although passive users

are not particularly looking for anything, they do recognize when none of the content is interesting to them and will leave the platform; which is why way-finding systems must focus on “a good experience” as professional 6 stated.

Google’s algorithms were perceived to do a better job of providing users with information than Facebook. Professional 3 stated:

So, in terms of algorithms. Google’s algorithm, that’s its own search thing. I think it’s based more on providing information that’s relevant to what you’re looking for versus like Facebook’s like, “Well, you’ve liked these things.” I think Facebook is based on past behavior. That doesn’t say Google isn’t in the search results, but Google often is designed to give you information about what you’re looking for at that moment.

This speaks to the nature of the way-finding system and its algorithmic architecture. Google is a search engine, which as the name implies, is specifically designed to search and find information that exists online for the user based on the keywords used in the query. Student 4 said, “Ninety-nine percent of the time, I can find [information] pretty quickly [on Google].” In general, search engines were perceived to do less personalization with results and provided users with the information they wanted.

This was a trend seen in other algorithms beside those used on Google. Twitter users loved its algorithms because it did not do as much personalization and showed information chronologically. Because of this, these algorithms do not function as much as gatekeepers because they are not curating content as much as other social media platforms like Facebook or Instagram. Twitter seems to appeal to more of the active internet users, individuals looking for specific content, rather than passive internet users.

The final algorithm primarily mentioned by users was Instagram's personalization algorithm. Instagram was perceived to do a better job at curating content for individuals, but there were still complaints that existed. Student 7 said:

Out of all of the [social media] platforms, I'd say [Instagram's] predictive algorithms are better than most. I would still almost rather have it just be chronological. But I can kind of see how that wouldn't be best. I've never thought that I was missing out on something. I am kind of surprised a lot where a really cool friend posts something and it's the first thing that pops up. It's always nice to see that it's working, you know? I mean, I don't know when it doesn't work, so it's hard to tell.

Professional 7 felt like Instagram took too much credence in the posts they liked at times. They said:

There was a girl that I commented on a couple of her pictures in a row, and so now she's always the first story that I see. I'm like, "K, I like her, but she's not the first one I need to see." You know? And it's like, "Oh yeah, you really like this, we'll put it first." And now I'm like, okay, I see her posts, so I like them because I like them, but now it thinks "Oh yeah, you really still like this." And it's to the point where I don't want her to think I'm creepy, even, cause we're not that close, but I just commented on a few of her things that were relevant to me.

These two comments touch on the power and problems associated with predictive algorithms.

When they do a good job at curating and gatekeeping information, users have no issues.

However, when they aren't functioning well, individuals notice they are off and become frustrated with the way-finding system.

The importance of a balanced predictive algorithm is particularly true for social media algorithms. Even passive users on these platforms are aware when an unbalance occurs in the personalization process. Filtering is an important process for these way-finding systems. Providing content to the users that is relevant to them and promotes interaction with that information is what drives their businesses. However, when the algorithms are not functioning well in the eyes of the users, there are perceived problems and can impact the satisfaction of the individuals using these way-finding systems.

The filter bubble: a consequence of algorithmic gatekeepers. The filter bubble is directly related to passive way-finding users and algorithms acting as gatekeepers. This section will specifically look at the individual perceptions of information filtering. Figure 3 illustrates the various algorithms observed in the interview with the participants in this study. Any interpretation of the data and comments made will be reserved for the discussion section.

As mentioned previously, those interviewed for this study were generally unaware or not consciously thinking about personalization when using the internet and its various way-finding systems. Although when specifically asked about filtering, some individuals did provide insightful comments.

One participant stated that the issue with personalization is when it causes individuals to exist in a content vacuum that provides them only the same, bias-confirming information.

Professional 6, said:

I feel like some people can make an argument against personalization, that oh, you're being so biased and only viewing the world the way you want to. But I feel like it comes down to an individual to be responsible for the type of information that they consume. Like, I will follow and subscribe to things that I don't necessarily always love, just so I

can be informed on the subject. Because I don't want to . . . I feel like it can be easy, if you're a poor media consumer, you just become really ignorant and kind of in your own view. And so, I do like to have a good mix of sources and information that I pull from. This shows the issue exists but can be circumvented by individuals. For users who are aware of personalization, there are steps that can be taken to prevent themselves from being in a filter bubble. Those who are aware tend to be high-elaboration individuals who are active way-finding users and process information via the central route. For those who are not aware personalization happens, they are more susceptible to the filter bubble effects. These are individuals who use the internet and its way-finding systems passively, relying on algorithms to curate information for them, and depending on heuristics to process information via the peripheral route.

Discussion

The changing nature of the news consumption process was a primary purpose behind Pearson and Kosicki's original study promoting way-finding as an additional way to research journalism in the digital age (2017). This study's purpose was to build off their work and continue to explore the way-finding framework. This was achieved by answering the various research questions, including what individuals' perceptions of way-finding systems were, how algorithms impacted the flow of information to internet users, and how individual internet users processed the information presented to them by the way-finding systems. Although the findings in this study are unique to this study, they suggest that way-finding may have the power to explain the flow of news in the digital age, but all forms of information. Way-finding helps provide researchers from all disciplines a conceptual metaphor that explains the complex phenomenon that is digital communication.

The results describe way-finding and its concepts in a linear fashion; however, way-finding in reality is not a linear process. Each factor previously mentioned in the results section all act in concert, oftentimes simultaneously, with one another. The purpose of this section is to explicate the connections that exist between each factor in a clear manner. Figure 4 diagrams how this process may take place; it is important to note that this diagram is not a perfect illustration of the way-finding process because of its complexity. And, although it is not a perfect representation of way-finding, it is a good start to help individuals understand how each piece of the way-finding process relate to each other and fall under the umbrella of way-finding.

This section will be structured in the following format in an attempt to provide organization to the explication process. First, the factors and consequences of having a dynamic user will be discussed. Specifically, the relationships between the active or passive mindset of the user and how devices and topic salience influence this mindset. Second, the relationships between each state of the dynamic user, the subsequent way-finding systems, and algorithms will be elucidated. This will include a discussion of the filter bubble phenomenon and how algorithmic gatekeepers exacerbate the issue. Finally, the important foundation that both gatekeeping theory and the ELM provide way-finding theory will be explained.

The Nature of a Dynamic User

At the core of way-finding theory is the concept of a dynamic user. The results express how individuals consume information online in both a passive and active fashion, thus the user is dynamic in nature—able to change between each state. The ELM provides important insight into why active users are more likely to behave in a certain way and why passive users behave differently. This is because the two types of users are looking for different outcomes. The active user has high-elaboration levels compared to the passive user who has low levels of elaboration.

This base provides way-finding theory the ability to study what forces influence whether users find themselves in passive or active mindsets. This study discovered several of these factors and outlined them in the results section.

The two primary factors found that influence the internet user's mindset are the device used and the salience of a topic. The device an individual uses to access the internet acts as a predictive indicator of whether the individual will use digital way-finding systems actively or passively. Active users are more likely to use a laptop or desktop computer to look for and access information online. Most likely, this is because the functionality of a computer better facilitates the type of search they are trying to do in their high-elaboration state. Additionally, if an individual is already using a computer to access the internet, the computer removes any barriers that exist regarding functionality. This means that they may not necessarily be in a state of high elaboration, but when they find a topic that piques their interest, the computer interface allows them to dig deeper into a subject more so than on a mobile device. Therefore, the laptop/desktop interface may either directly or indirectly affect the searching habits of a user online along with their mindset and levels of elaboration.

In many cases this relationship between the user's mindset and device becomes a chicken and the egg paradox, wondering which forces affects which first; ultimately, it will vary by individual and situation. Some individuals may have a topic in mind already when they set out to discover information online. Other times, they may be scrolling through not looking for anything in particular, but because they are on an interface that allows them to dive deeper and conduct more thorough research, they easily slide into a high-elaboration state of mind. Whether their mindset was already in a state of high-elaboration or the computer allowed them to shift into a

highly elaborative mindset, it may never be clear; what is clear, however, is that there is a correlation between the salience of a topic, the device a user is on, and how a user will behave.

When the dynamic user is in a state where a) elaboration is high, b) the topic is of interest to them, and c) they are on a computer, this research observed that all of the prerequisites met for a user to take control of any given way-finding system and use it and its algorithms as tools.

Participants demonstrated various behaviors to ultimately hunt down and find the exact information they are looking for (see Table 6). This aligns with behavior associated with central route processing. This is a very active process and usually occurs only if all of these factors are aligned; if one is not aligned, then users will either abandon their search or change the situation (like move from a phone to a laptop or desktop computer) so that they may proceed with their search.

Because of this mindset, the biases that exist in the answers provided by the way-finding system's algorithmic gatekeepers become irrelevant. Bozdag specifically calls out over twenty factors that influence the algorithms' decision-making process and ultimately the information presented users (2013)—but these factors are made moot by the user's determination to find the information they want. In this case, the biases of the individual are what affect what information is consumed, not the biases that exist on the gatekeeping end. However, these forces become relevant when discussing passive users—which shifts the discussion to mobile devices and their influence on the user's mindset.

Mobile devices seem particularly adept at facilitating quick, heuristic searches for information as well as helping users entertain themselves when they are bored. This indicates that the user is in a passive state with low inclinations towards elaboration. Like with computers and whether they cause the active mindset in users or not, there is a correlation between mobile

devices and influencing users to have a more passive mindset. Because of the limited functionality of a mobile device, i.e. smaller screen, limited keyboard and controls, the user is more likely to find information only if it is presented to them by an algorithmic gatekeeper than by their own volition. Because they are on their phones, they may be bored or looking for information quickly; both states of mind indicate they are not looking to dive deep into topics. Therefore, participants either mindlessly scroll through the algorithmically curated information or they readily accept the information presented to them by algorithms.

In these instances, the various inherent biases discussed in Bozdag's (2013) work become highly applicable; the passive user becomes subject to the influences of the algorithms employed by each way-finding system and the algorithms biases are reflected in the results presented. Individuals may gravitate to content that catches their interest because it is related their interests, which illustrates the homophilic nature of people discussed in the literature review (Pariser, 2011a; Sunstein, 2007; Bozdag, 2013). Additionally, the algorithms may serve them content that is particularly relevant to them due to their location. Advertisements are shown by all of the way-finding algorithms because it is a primary source of revenue for the companies that build these systems (Bozdag, 2013). Bozdag's work establishes the existence of these biases, this work takes those biases and explains when they have a direct impact on the content presented to the internet user. This leads us to the next aspect of our discussion: the relationship between the dynamic user and specific way-findings systems.

Way-Finding Systems: Both a Tool and a Leash for Users

As previously mentioned, way-finding systems can be used as tools by users to access information if they are in an active mindset; or, they can act as leashes, guiding passive users to information that algorithms determine to be relevant to them. Therefore, one of the basic tenets

of way-finding theory is that the way-finding systems' functions will change as the user's motivations change. If the user's motivation is to be entertained or to simply pass time on the internet, the way-finding system provided them with the content it thinks they want based on the personalization algorithms that it employs. If the user's motivation is to educate themselves and to find information on a topic, they will be less inclined to simply accept the information that is presented them and will search to find the information they desire. In the first case, the way-finding system is like a leash, guiding users to places on the internet it thinks they want to go; in the second case, the user controls the algorithms of the way-finding system to extract the information they need.

Additionally, some way-finding systems seem to be geared towards entertainment and passive use, whereas others appear to be more functional and facilitate actively looking for information online. Particularly, social media falls into the passive way-finding system category. This appears to be the case for several reasons. First, users access social media easily via their phones. This means that they are already predisposed to process information passively. They do not have high levels of elaboration when on their phones, so they rely on algorithms to show them information. Therefore, the algorithms guide them from topic of predicted interest to topic of predicted interest, much like a leash is used as a guiding tool.

Next, because of the habitual nature of social media use, it makes users more reliant on algorithms to curate content that is relevant to them. They do this by showing users content based on who they follow and what posts they interact with. The algorithms also filter out information that is not presumed to be relevant to the individual. Because these algorithms are trying to facilitate engagement through this filtering process, it may leave individuals who are in a passive state of mind and on social media victims of the filter bubble phenomenon. This study

confirmed the observations of Pariser (2011) and found that the filter bubble does exist and is something to be concerned with when discussing the social implications of the social media way-finding systems. When someone is scrolling, they no longer care to fact check or dive deeper into issues. Because of this, fake news, disinformation, and click bait headlines can propagate and spread false information more easily. Hence, the filter bubble is more of an issue on social media.

Additionally, this notion brings about an important conversation that should be had and will be noted here. Specifically, the idea that social media platforms have a social responsibility to minimize the biases that exist in their algorithms—which was covered previously when examining Bozdag’s work on algorithmic bias (2013)—in order to eliminate the negative effects of the filter bubble. Understandably, these filtering and personalization algorithms exist so that social media platforms have a positive user experience; however, the debate must be had on where the balance lies between a highly tailored platform to improve users’ experiences and the negative social implications that arise from these algorithms personalizing information. A balance must be found so that the negative social implications—like those previously mentioned including fake news, echo chambers, disinformation, etc.—can be minimized while allowing these platforms to still maintain high user experiences for those utilizing their platforms. This is a universal issue across the internet but is extremely relevant to social media because of their structure and how people use the platforms.

Unlike social media, a search engine’s ability to provide relevant information depends on the topic being searched and the activity level of the user. Search engines are designed to facilitate both passive and active internet users. The device being used to access information via a search engine acts as a predictor of what type of mindset an individual will be in when using

that way-finding system. Phones are used primarily for low-elaboration topics while computers were used for topics that were of more interest to the users and were highly elaborative in nature.

Another aspect that was observed to impact the ability of a search engine to provide users with relevant information was the nature of the topic. Depending on whether a topic was controversial or not, it would require different levels of elaboration on the user's part. More controversial topics required users to have high levels of elaboration using the central processing route. In this case, the central route can be compared to having a high level of media literacy. Media literacy helps individuals find specific sources they are looking for. Individuals who are highly media literate tend to be more active internet users who use central route processing to find the information they wanted via search engines (the specific tactics can be found in Table 6). These users were able to use Google as a tool rather than fall prey to filtering of information by personalization algorithms.

However, for the users who did not have the proclivity towards high levels of media literacy, they were easily confused and overwhelmed by the information Google provided them regarding topics that were more controversial. These users were more passive in nature and generally did not engage with information online in depth. There is a perceived correlation between passive users and users with lower levels of medial literacy. They are more likely to use the heuristic tactics (see Table 5) discussed in this study to facilitate peripheral route processing. These users primarily used Google to help them find quick facts and information without too much time or effort. These users are more dependent on algorithmic gatekeepers and are more likely to experience the effects of the filter bubble phenomenon.

Email appears to be the way-finding system that best allows users to control the information they receive. Though there is filtering that occurs—emails being placed in a spam

folder or labeled as junk mail—most emails still flow through the inbox. Then, users can quickly decide what emails are important and which are not. The email provider does not decide what content to show the individual like what occurs on social media or on a search engine. Email is largely used for very direct communication practices. Hence most email use by participants was done for work or school. Therefore, email may be the platform that best facilitates the sharing of information online, though it is limited by the individuals using the platform. People who have a lot of information to share can do so using this way-finding system; however, the system itself does not provide users with information. Thus, email's usefulness as a way-finding system is almost completely dependent on its users, almost exclusively making it a tool.

In each case, the way-finding systems had some form of algorithmic gatekeeping that occurred. The extent to which the algorithmic gatekeepers influenced the flow of information depended on the mindset of the individual—whether they were active or passive users. When individuals are in a passive mindset, they are more susceptible to the influence of algorithmic gatekeepers. However, when users are in an active mindset, they are more likely to use the algorithms as tools to achieve their goals. In this state of mind, users are not likely to be susceptible to the biases Bozdag (2013) speaks of in his work and are more likely to avoid the filtering altogether because they are searching for specific information. Therefore, algorithmic gatekeepers and the personalization that occurs has more effect on passive users rendering them more likely to fall into a filter bubble online.

Gatekeeping Theory and the ELM: A Strong Foundation for Way-Finding Theory

In gatekeeping theory, the gatekeepers oversee deciding what information to disseminate to the masses. In way-finding theory, when users are passively accepting information while on their phones or passing time on the web, the algorithms are the gatekeepers of information for

those passive users. In this case, the tenets of gatekeeping theory are applicable because they fall within the old or traditional way information flowed: top-down. However, where way-finding theory differs from gatekeeping theory is that it considers and accounts for active users who are purposefully searching out information. When this occurs, the algorithms' gatekeeping functions becomes secondary to their role as information finding tools. In this paradigm, users are no longer simply accepting the information that is presented them via gatekeepers, rather they are picking and choosing specific information they want to consume for themselves. This work confirms the findings of Pearson and Kosicki (2017) and build out the dynamic framework they started when explaining the concept of way-finding in their work. This work adds to their framework by incorporating not only a gatekeeping perspective, but an ELM perspective as well. Both of these theories are vital to the way-finding framework and as Vos (2010) stated, gatekeeping theory is still applicable—in many ways, now more than ever—and serves as an important lens through which way-finding systems may be understood. It helps to give insight into the human and algorithmic gatekeepers which are both key aspects of the way-finding construct.

The power of way-finding theory lies in its ability to account for both types of users, marrying gatekeeping theory—which accounts for passive internet users—with the ELM—which helps explain the active users—to see the whole picture when studying the flow of information in the digital age. The antiquated model was a top-down model where a group of individuals controlled what information flowed to the public. Now, the new model considers both the individuals providing information to the public as well as the public's ability to find and choose what information they want to consume. Way-finding systems are designed to facilitate both functions, thus the popularity of social media, search engines, email, and the internet in

general. An individual will be served by the way-finding system regardless of whether they are looking to passively consume content or actively search for the content they want. Ultimately, way-finding theory is the most accurate way to describe the flow of information in the digital era, accounting for both types of users and examining this process from a user-centric point of view.

Limitations and Future Research

Limitations associated with this study are those commonly associated with qualitative research and grounded theory. This study looked to discover and understand a new way to look at the flow of information in the digital age. Because of this, the breadth and depth that exist with older theories are lacking. This study examined only a few way-finding systems; there are possibly hundreds or even thousands of way-finding systems that exist online and maybe studied specifically in the future. This acts as both a limitation and possible areas for future researchers to fill in the gaps and continue to flesh out way-finding theory and its tenets. Additionally, the researcher was only able to interview individuals in areas surrounding Brigham Young University. A more diverse group of individuals may yield more results and other insights not included here. Consequently, the perceptions here are not transferrable to the general public; however, the results are able to provide future researchers direction and insight into how to study way-finding theory from a quantitative perspective.

Future research may include looking directly at the impact devices have on the user's likelihood of high elaboration. Additionally, researchers may conduct experiments to understand the ability individuals have to find truth through various way-finding systems. There are many other way-finding systems that exist on the internet and should be investigated as well, i.e. other popular social channels like snapchat and various other search engines. Quantitative research

may be conducted to find more generalizable findings that are applicable to the public. The effect on individuals outside of the way-finding systems should also be considered in future models of way-finding theory. This study was a grounded theory approach to help establish and build theory on a general level. Now, just as gatekeeping theory elicits strong applications to the elaboration process, this theory too should be examined to see what factors are more significant than others in the way-finding process.

Conclusion

In conclusion, the way-finding construct is a new framework that allows researchers to study the complete process associated with the flow of information in the digital age. This study took the framework established by Pearson and Kosicki (2017) and more deeply explored the construct of way-finding. Way-finding is a user-centric perspective that accounts for both active and passive users. This study found that passive internet users behave much like the audience used in gatekeeping theory, receiving information that is presented to them by gatekeepers. However, a better understanding now exists of how the internet and subsequent way-finding systems are used by active users to find information. Thus, the effects of gatekeeping theory are maintained, while better explaining how active internet users find information online.

The three basic components of way-finding were discovered. Namely, the user's motivation for using the internet, how they interact with way-finding systems, and the algorithmic gatekeepers' ability to influence the user. The study found that the device used by the individual to access the internet plays an important role in determining what kind of mindset the users have. This in turn leads users to process information differently, as established by this study. The tenets of the ELM, therefore, become important in way-finding as they help explain

the different ways the individuals in this study processed information. It also helps inform researchers why individuals interact with way-finding systems differently and what the perceived use of each system is for the user. Finally, as mentioned, this study helps explain how information personalization affects passive and active users. Passive users are more likely to feel the effects of algorithmic gatekeeping and the filter bubble phenomenon, whereas active users can manipulate and use way-finding systems' algorithms to find the information they want to see. By studying the interactions between these three components, this study—and moreover, way-finding theory in general—provide a more accurate understanding of how information flows from one individual to the next in the digital age.

Way-finding will help researchers understand the complex process of digital communication on the internet for decades to come. This study exemplifies how the new, digital audience is more complex to understand because the internet has removed the previous constraints that existed during the pre-internet era, namely scarcity and terminal gatekeepers. Because of the proliferation of sources and gatekeepers, users now have more choices for information than ever before. For this reason, way-finding systems are important to understand because they facilitate the search for information online. Way-finding is a powerful tool that will allow researchers to understand every aspect of the flow of information in this new digital era.

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Appendix A: Interview Guide

Question: What are your personal feelings towards the internet?

Question: What do you use the internet for?

Question: What websites do you interact with most online?

Question: Do you interact with other users online?

Question: Do you read news articles online?

Question: What do you think about personalization on social media and in search engine results?

Question: How do you find information using the internet?

Question: How do you judge the validity and truthfulness of the information you find online?

Appendix B: Tables and Charts

Table 1. The Three Pillars of Way-Finding Theory

Axial Coding Categories
<i>Perception of Popular Way-Finding Systems</i>
<i>Information Personalization Process</i>
<i>User Mindset on Way-Finding Systems</i>

*The above table represents the subcategories that are nestled underneath category one.

Table 2. Open Coding Category One: Perception of Popular Way-Finding Systems

Axial Coding Subcategories
<i>Perceptions of the Internet</i>
<i>Perceptions of Email</i>
<i>Perceptions of Search Engines</i>
<i>Perception of Social Media</i>

*The above table represents the subcategories that are nestled underneath category one.

Table 3. Open Coding Category Two: Information Personalization Process

Axial Coding Subcategories
<i>News</i>
<i>Perception of Algorithms</i>

*The above table represents the subcategories that are nestled underneath category two.

Table 4. Open Coding Category Three: Users' Perception of Internet Behavior

Axial Coding Subcategories
<i>Device Used</i>
<i>Elaboration Likelihood Model</i>
<i>Media Literacy and Credibility</i>

*The above table represents the subcategories that are nestled underneath category three.

Table 5. Peripheral route techniques used by participants for information processing

Coding Categories
<i>Authenticity</i>
<i>Meta Data (Headings & Summaries)</i>
<i>Informational Pop-ups</i>
<i>Search Engine Optimization</i>
<i>Sponsored Links</i>
<i>Suggested News</i>
<i>Thought Leaders</i>
<i>URLs</i>
<i>Website Branding & Reputation</i>

*The above table represents all peripheral route techniques identified during open coding.

Table 6. Central route techniques used by participants for information processing

Coding Categories
<i>Checking Sources Cited</i>
<i>Link Clicking</i>
<i>Multiple Sources</i>
<i>Page Diving</i>
<i>Rephrasing Search Parameters</i>
<i>Limiting Sources by Date & Time</i>
<i>Examining Research Methodologies</i>

*The above table represents all central route techniques identified during open coding.

Table 7. Information sharing functions of Instagram

Coding Categories
<i>Direct Messaging</i>
<i>Explore Tab</i>
<i>Hashtags</i>
<i>Instagram Stories</i>
<i>Personal Profile</i>
<i>Searching</i>
<i>General Instagram Feed</i>

*This table represents all information sharing functions discovered during open coding.

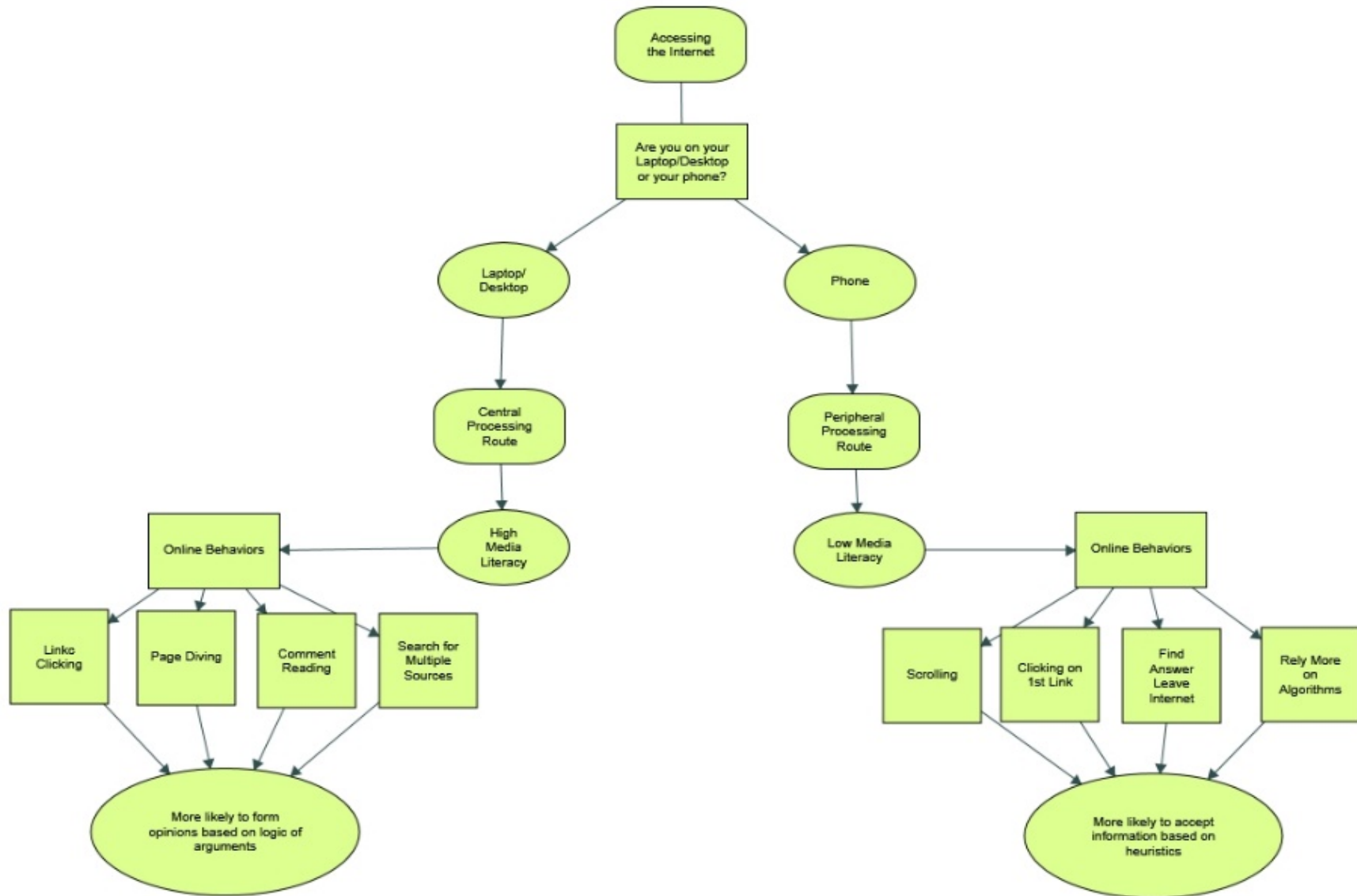


Figure 1: Mindset of users when using different devices to access the internet.

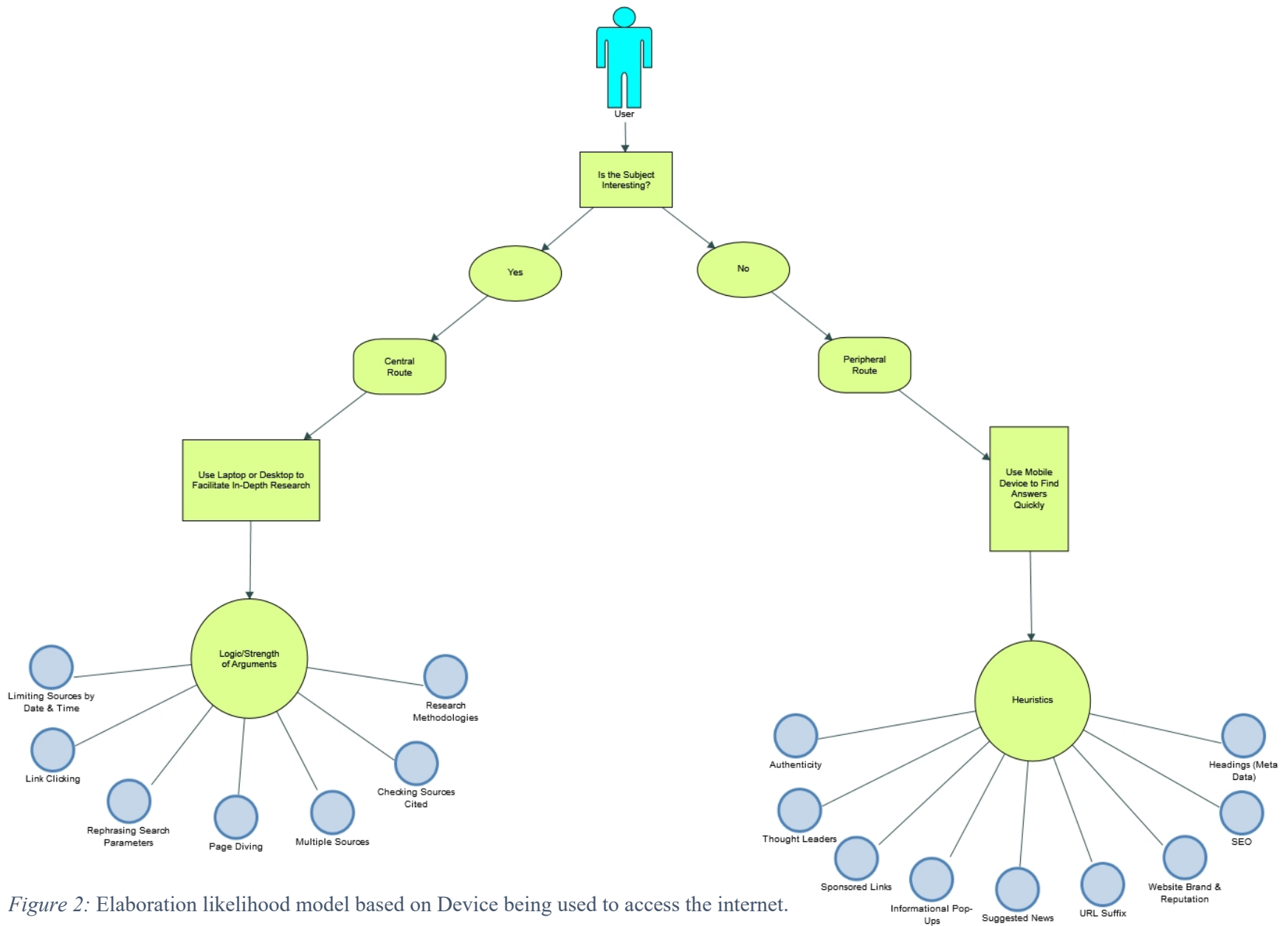


Figure 2: Elaboration likelihood model based on Device being used to access the internet.

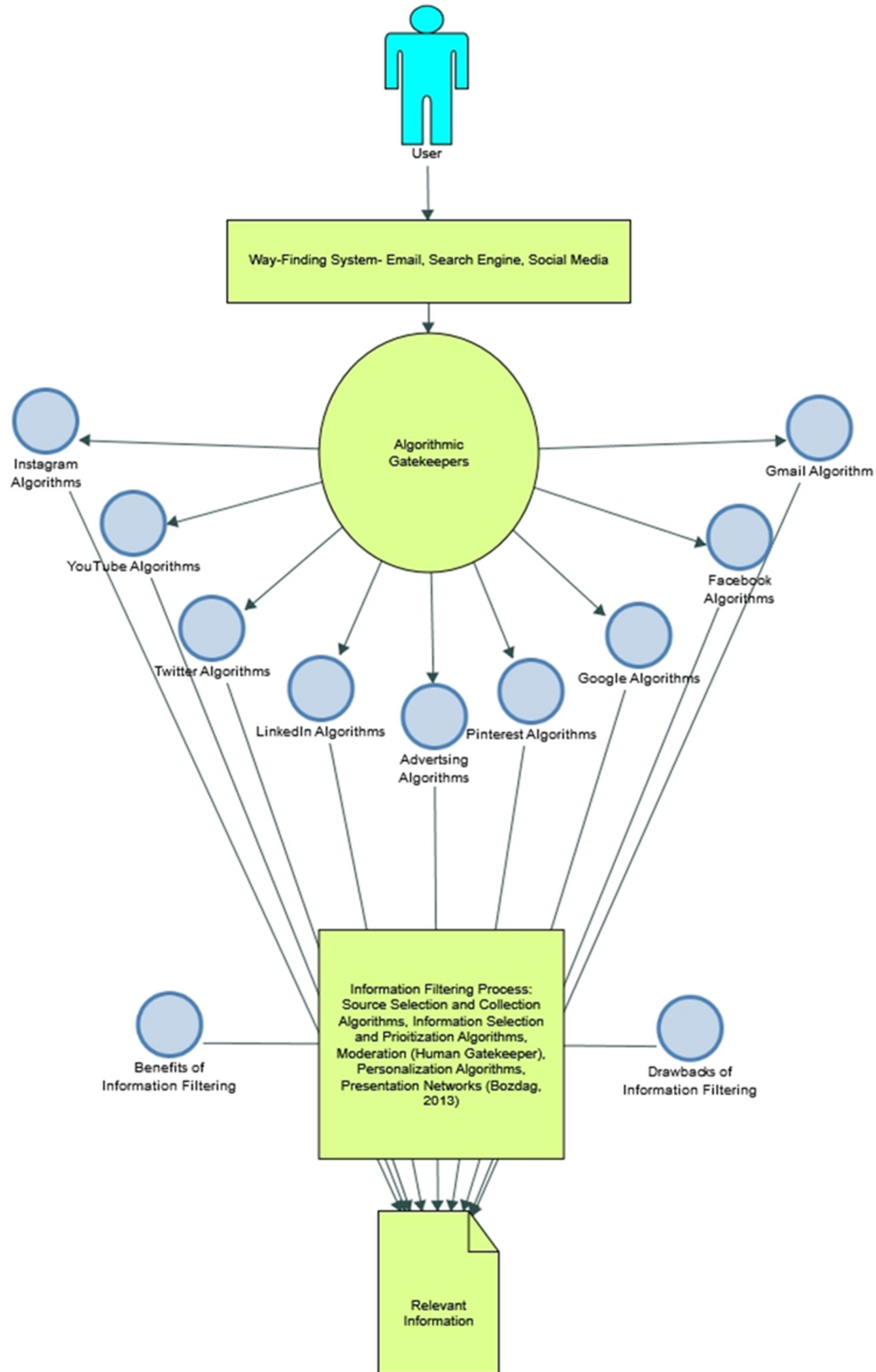


Figure 3: Algorithmic gatekeepers involved in the personalization process that creates the filter bubble for internet users.

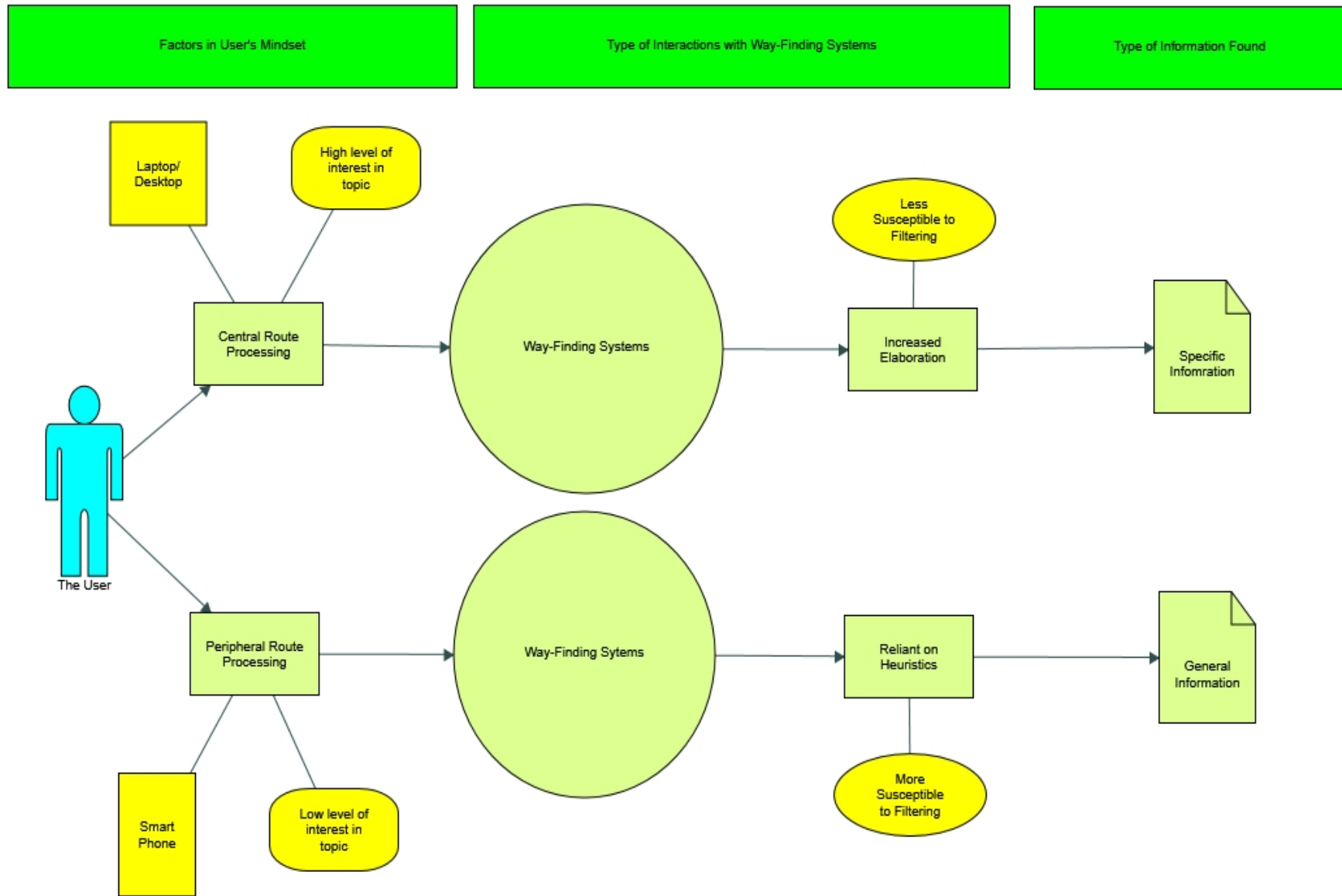


Figure 4: Way-finding Theory concepts and model illustrated.