Title

The New Yellow Journalism: Examining the Algorithmic Turn in News Organizations' Social Media Information Practice through the Lens of Cultural Time Orientation

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The New Yellow Journalism:

Examining the Algorithmic Turn in News Organizations' Social Media

Information Practice through the Lens of Cultural Time Orientation

A dissertation submitted in partial satisfaction of the

requirements for the degree Doctor of Philosophy

in Information Studies

by

Diana Ascher

2017

ABSTRACT OF THE DISSERTATION

The New Yellow Journalism:

Examining the Algorithmic Turn in News Organizations' Social Media

Information Practice through the Lens of Cultural Time Orientation

by

Diana Ascher

Doctor of Philosophy in Information Studies

University of California, Los Angeles, 2017

Professor Leah A. Lievrouw, Chair

To address the complex challenges posed by increasingly fast information exchange in social media networks and declining advertising revenue in the digital era, news organizations are turning to software to automate online engagement. To date, there has been little study of whether algorithmic social media solutions used by news organizations are able to replicate the nuances of culturally informed human judgment. Using a novel combination of the critical incident technique, network analysis, and a new interpretive method—the Time Analytic Framework for Information Practice—this dissertation explores the effects of cultural time orientation on the social media activity of three culturally distinct news organizations before and after automation.

The present study investigates how cultural time orientation may exacerbate or mitigate the effects of the algorithmic turn on news organization information practice by examining cases

in which tweet prioritization appears to have violated reader expectations. Findings suggest that the three methods employed by the news organizations to automate the information practice previously conducted by social media managers reflect the news organizations' cultural time orientations. Further, case studies of persistent tweets in each social media network reveal the emergence of a new form of yellow journalism—*algorithmic sensationalism*—arising from information practices that disproportionately amplify inflammatory content and lack a mechanism for applying timely human judgment.

The dissertation of Diana L. Ascher is approved.

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University of California, Los Angles

2017

For my parents

For my daughter

Because life is both, always

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Chapter 1: Introduction

The increasingly rapid pace of information exchange since the advent of the internet, the rise of citizen journalism, and growing dependence on social media networks as primary news sources create a need for greater understanding of the values that govern news judgment in social media networks. Though culture has been shown to influence both individual decision making and organizational behavior, it remains an under-studied aspect of the information context. Responding to calls for research on time as a context of information, this dissertation presents the first analysis of the role of a specific cultural dimension—time orientation—in information practice.

The present study investigates the role of cultural time orientation in the social media networks of three culturally distinct Los Angeles news organizations—*La Opinión, The Korea Times,* and the *Los Angeles Times.* Recent changes in ownership, increasing competition for the attention of news readers, and the demise of the print advertising business model have foreshortened expectations for return on investment, prompting news organizations to cut costs by eliminating jobs and implementing software solutions to automate social media engagement. This dissertation explores the implications of this pivotal moment in journalism—which I call the algorithmic turn—for the persistence of cultural time orientation in news organizations' Twitter networks. Violations of readers' culturally influenced expectations for news judgment provide a rich context in which to study the effects of cultural time orientation on an instrumental information practice: prioritizing news items for distribution via Twitter in the form of tweets.

Three aspects of the research design are notable in light of recent trends in the digital news media industry. First, a combination of the critical incident technique, social network analysis, and a new method of informetric network visualization and analysis identifies tweets in

the networks of each news organization that may exhibit cultural time orientation. Second, a new framework derived from an analysis of the temporal affordances in 36 models of information practice—the Time Analytic Framework for Information Practice—facilitates the contemplation of the role that cultural time orientation plays in these "critical incident tweets" (CITs) in five modes of information practice (Attention, Interpretation, Evaluation, Prioritization, and Action). Third, an interpretive analysis of tweet prioritization reveals how various platform-related information practices may enable or constrain the expression of cultural time orientation in Twitter networks.

Visualizing and focusing on tweets that catalyze extended discourse—persisting through several generations and requiring greater than cursory time, attention, and effort—is a new values-based approach to understanding social media engagement. The present study suggests how cultural time orientation may exacerbate or mitigate the effects of the algorithmic turn on news organization information practice by examining cases in which tweet prioritization appears to have violated reader expectations. Findings suggest that the three methods employed by the news organizations to automate the information practice previously conducted by social media managers reflect the news organizations' cultural time orientations.

The implications of these preliminary findings contribute to the "fake news" discourse, which came to a head in the aftermath of the 2016 U. S. presidential election. The present study is the first in a research agenda aimed at investigating how the algorithmic turn contributes to the *new yellow journalism*—disproportionate distribution of attention-grabbing news items of dubious veracity—arising from automated social media engagement at news organizations, as well as among the engaged readership, which result in a prioritization of news coverage that runs counter to traditional news values and Fourth Estate responsibilities. Beyond common practices

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such as search engine optimization and clickbait, the case studies presented in this dissertation consider the role of cultural time orientation in a new form of yellow journalism, which I call *algorithmic sensationalism,* by uncovering (1) the algorithmic approaches adopted by the news organizations and (2) the effects of this approach on prioritization of news coverage.

Findings also suggest that key performance indicators (KPIs) commonly used to assess online reach neglect an important indicator of engagement, namely, message persistence. The automated solutions in use at *The Korea Times, La Opinión,* and the *Los Angeles Times* do not appear to support the timely incorporation of feedback from the readership into the process of prioritizing tweets for distribution. Rather, use of algorithmic solutions may contribute to news homogeneity and undesirable amplification of inflammatory and offensive content in social media networks. Further research is needed on the role of time orientation and other cultural dimensions on protracted engagement in social media networks in the context of the algorithmic turn.

1.1 Problem Statement

Technological innovation has ushered in an era of extraordinarily rapid information exchange, with striking implications for decision making. While various constraints on time have been noted to influence information practice, cultural differences in the conceptualization of time remain an under-studied aspect of the information context. This study examines how such different temporal understandings, called *cultural time orientations*, influence (1) how people engage with information (*information practice*), and (2) the conditions under which this engagement occurs (the *information context*).

Struggling against the complex challenges posed by increasingly rapid information exchange in social media networks and declining advertising revenue in the digital era, news

organizations are turning to software to automate online engagement. To date, there has been little investigation of the effects of this trend on how news items are prioritized for distribution via social media.

Since American voters are turning increasingly to social media networks as primary sources of news (Pew, 2016b), this research examines the process by which news items travel through Twitter, a platform designed expressly for the timely exchange of relevant information. As of June 2016, Twitter had more than 313 million monthly active users, and consistently outperforms other platforms in news coverage. In addition, Twitter is the only social media platform that emphasizes time in its mission statement: "To give everyone the power to create and share ideas and information instantly, without barriers" (Twitter, 2016).

This research employs a novel combination of the critical incident technique and network analysis to identify tweets that may reflect cultural time orientation. A new framework is introduced to analyze such tweets in an exploration of the effects of cultural time orientation on the social media information practices of three culturally distinct news organizations—*The Korea Times, La Opinión,* and the *Los Angeles Times*—before and after each implemented automated solutions for posting news to Twitter. These organizations were selected to represent different cultural time orientations, because they are major news sources for, and reflect the interests of, three large and distinct ethnic/language communities in the Los Angeles area.

It is unknown whether and how cultural dimensions such as time orientation manifest in information practice online. Further, there have been no studies, to date, that explore the ability of news algorithms to replicate the nuanced influence of cultural time orientation on human judgment in the prioritization of social media posts. Since the mandates of news organizations often include providing news to audiences of specific cultural backgrounds, it is important to

determine whether the algorithmic turn may have unintended consequences for news organizations and their audiences. Further, the time-sensitive nature of digital news production makes an exploration of cultural time orientation in tweet prioritization particularly useful in light of the rapidly changing online news landscape. As such, this doctoral research explores the following research questions:

RQ1.   To what extent do human and algorithmic news prioritization reflect the temporal values and beliefs of culturally distinct news organizations?

RQ2.   How has the shift from human to algorithmic prioritization of news items for distribution via Twitter affected news organizations' social media activity?

1.2 Situating the Study

The study answers two calls for scientific inquiry: (1) the consideration of time as a component of the information context (e.g., Savolainen, 2008; Johnson, 2014), and (2) an examination of the effects of the algorithmic turn on news distributed via social media (e.g., Lewis & Westlund, 2014; Coffington, 2015). This research aims to make visible previously unstudied aspects of the information context, which are important for contemplating the potential effects of technological innovation and shifting societal norms on ethical, equitable access to— and understanding of—information.

An overview of literature at the intersection of information, culture, and technology relevant to news evaluation, prioritization, and dissemination via social media follows in the next chapter. I draw from theoretical and empirical research in a variety of relevant disciplines, including behavioral science, communication, cultural studies, information studies, journalism, management, organizational behavior, psychology, public policy, and sociology, as groundwork

for a mixed-methods study of cultural time orientation in the digital news domain, before and after the shift to automated news prioritization.

Chapter 3 provides details on the research design and technological considerations for reproducibility in journalism and other domains, and a description of a new framework designed to aid researchers in exploring cultural dimensions as components of the information context. A brief summary of findings follows in Chapter 4, and is expounded in Chapters 5, 6, and 7 with case studies that reflect the implications of these findings for news producers and consumers, and for democratic society as a whole. Finally, Chapter 8 concludes the dissertation with a review of the study and its implications, with an eye toward further research on the effects of cultural time orientation in other naturally occurring experimental settings prior to and following the implementation of algorithms that supplant human judgment.

Chapter 2: Literature Review

This chapter situates the study of cultural time orientation in information practice within the literature from information studies and a handful of related disciplines. First, I explain my use of the term "information practice" throughout the dissertation, followed by a discussion of the relationships among information practice, prioritization, and values. Next, I describe how existing models of information practice contend with time, and look to cultural studies, organizational behavior, sociology, and public policy for insights into the effects of different values hierarchies on information-related routines and systems. The remainder of Chapter 2 is devoted to a synthesis of my analysis of temporal features in 36 models of information, culminating in a new framework for investigating the influence of cultural time orientation and other contextual factors on human engagement with information: the Time Analytic Framework for Information Practice.

2.1 Terminology

Information behavior is a popular term used to describe what people do with information in response to information needs and motives. Tom Wilson describes the concept as "those activities a person may engage in when identifying their [sic] own needs for information, searching for such information in any way, and using or transferring that information" (Wilson, 1999, p. 249). However, the term's definitional scope has expanded so drastically that it may be taken to include all forms of information need, seeking, and use, including problem solving, sense making, everyday life information seeking, and information foraging (Savolainen, 2007). "Even though 'information behavior' is a popular phrase, the reflective discourse on information behavior has remained fragmentary, and the concept is largely used in an unreflective fashion" (Savolainen, 2007, p. 119). Donald Case also notes that the broadening of scope is problematic

because it weakens the distinctiveness of "information behavior" as a concept (Case, 2012, pp. 372-373).

By contrast, the umbrella term *information practice*, as proposed by Reijo Savolainen, seems a superior descriptor with which to examine the role of time in models of information behavior, search, and retrieval, because the attribute assessed in this research—time orientation—is a cultural aspect of the information context. As Savolainen explains, the distinction between information behavior and information practice is that the former "is primarily seen to be triggered by needs and motives, while the discourse on information practice accentuates the community and habitualization of activities affected and shaped by social and cultural factors" (Savolainen, 2007, p. 126). Information practice represents a rejection of approaches that focus on the individual as the unit of analysis, in favor of a philosophical perspective that addresses the social nature of information processes in which "information and knowledge creation [are] rooted in a sociocultural context" (Fulton & Henefer, 2010, p. 2519). Since the aim of this research is to identify patterns of information activity that may reflect cultural values in social contexts—the newsroom and the "Twitterverse"—I employ information practice as the descriptor for the activities analyzed in this dissertation.

In addition to this philosophical distinction, this research concerns information practice—as opposed to information-seeking behavior, information retrieval, or information search—for several methodological reasons. First, the study focuses on the detection of a cultural dimension in the social media networks of news organizations before and after the intervention of automated selection, prioritization, and distribution of news items. The study's design, then, must account for contextual elements. Research on information worlds and small worlds (Burnett, Besant, & Chatman, 2001; Jaeger & Burnett, 2010) offers useful conceptualizations of

information value and information behavior, which inform this research, but the research designs employed were not appropriate for studying social media networks in the algorithmic setting. Similarly, Vivienne Waller's 2013 study on everyday information practices in Australian households informed the use of the term information practice, but she uses it in a non-work context. As work contexts have expanded with the advent of mobile information-communication technologies (ICTs), researchers such as Mohammad Jarrahi have addressed contextual analyses of information work with "a broader 'deportment' literacy, or more conceptually, one overall meta-information practice" (Thomsen & Jarrahi, 2015). I use information practice in a similar fashion.

Information practice also resonates well in organizations concerned with strategic information management. Such organizations have embraced the notion of communities of practice, wherein a focus on social structures provides a framework for evaluating how people learn with and from one another (Saint-Onge & Wallace, 2003). Thus, organizational information practice comprises multiple communities of practice, each responsible for a particular set of information activities (Wenger, 1998). Within these communities of practice, differences in access, framing, relevance assessment, and trustworthiness affect how people evaluate information in relation to their respective worldviews. Further, these valuations influence individual and group decisions regarding information practice. As such, framing this research in terms of information practice makes it more likely that the findings and recommendations will be useful to news organizations and the academics who study them. Researchers have long characterized the news providers of the Fourth Estate as sites of professional and cultural meaning in terms of journalistic practice (Coddington, 2015). Thus, information practice is an

appropriate term to describe the activities that are the focus of this study, which will resonate naturally in the discourse of researchers and professionals concerned with digital news media.

2.2 Information Practice as a Reflection of Values

Values are the basic criteria by which people assess their own behavior and the behavior of others. They are the blueprints for motivation, expectation, perception, interpretation, and action. Harold Lasswell, father of the policy sciences, viewed values as a hierarchy of desired outcomes, mediated by strategic interaction (Lasswell, 1948). In Lasswell's view, decision makers assess alternatives using culturally informed base values, and employ various strategies in "the management of base values to affect value outcomes" (Lasswell, 1948, p. 26). Further, the tradeoffs among values that occur during social interaction "can be summarized in terms of value shaping and sharing, and especially of value priority, accumulation, distribution, investment, and enjoyment" (Lasswell, 1948, p. 20). Thus, values are the means by which individuals and groups weigh alternatives, make decisions, and perceive outcomes during social interaction.

Decision making, of course, requires attention to information. As James March explains, "the study of decision making is, in many ways, the study of search and attention" (1994, p. 23). His examination of decision making delves into the concept of frame rationality—that actors make rational choices in context, based on both cognitive and evaluative beliefs. Herbert Simon's criteria for a good theory of choice also concern attention. He asks that theories of choice explain how attention is rationed, how and where searches for alternatives are conducted, and how selection is biased (Simon, 1983). Though researchers have explored the effects of bounded rationality and individual and group interpretations of reality on decision making (Cyert

& March, 1963; Tversky & Kahneman, 1974; Hambrick & Mason, 1984), there are very few studies on the effects of culture on the information context with respect to decision making.

2.3 Decision Making and Prioritization

While values are the basic criteria by which people weigh alternatives, make decisions, and perceive outcomes, people also may base their decisions on heuristics, or shortcut rules, which are instilled through a combination of individual, social, and cultural experiences. Time is one of the many factors that influence decision rules. Typically, time is not characterized as a value, per se; usually, time is conceived as a scarce, linear resource that exists in the real world and has universal attributes. Conceptualizations of time as a linear and abstract notion have evolved to include complex relationships that explain the "nanosecond" culture of a postmodern era, and a pluri-temporality in which different types of time—each constructed from human experiences in individual, social, organizational, and cultural contexts—coexist simultaneously (Ballard & Siebold, 2003, 2004; Giddens, 1984; Nowotny, 1992; Rifkin, 1987). Time is the implicit organizing structure of prioritization. Cultural variations in the conceptualization of time, therefore, may affect how people value and prioritize information.

This study is concerned with the notion of cultural time orientation—a subjective phenomenon that is constructed, experienced, perceived, interpreted, and managed. In decision making, time can be understood as a factor that shapes an individual's values, because one's attitude concerning time affects a person's interpretation of the world and the consequences of one's actions. This study aims to determine how cultural time orientation manifests in a context that is particularly concerned with time—journalism—by examining the information practices of individuals responsible for evaluating, selecting, and distributing news items via the Twitter microblogging platform at three news organizations with distinct national cultures and that have

implemented algorithms that have replaced these decision makers. The general approach to the topic is anchored in the premise that values determine an individual's decision-making policies, and that cultural time orientation is among the factors that influence those values. In other words, one's decisions are based on a unique set of values, which are subject to the influences of cultural factors like time orientation, as well as the physical, psychological, social, and organizational forces that constitute the decision-making context.

Chief among the daily decisions people make is the prioritization of tasks. Deciding what to do next is a complex process that not only entails dynamic evaluation of choice alternatives, but also a big-picture understanding of the potential consequences of each option. It is this aspect of prioritization that may be most influenced by cultural time orientation. Savolainen's observation that "we lack empirical studies showing how people prioritize information sources in real life situations" is one of the more recent appeals in information studies to conduct research on how people prioritize information (2006, p. 121). In the present study, prioritization is defined as a manifestation of continual decision making in the evaluation of information, which determines the sequential order of action on the part of the decision maker. Similar to investigations in archival studies, in which cultural norms influence what information becomes part of a collection and what is excluded, my analysis of how news organizations prioritize information for distribution via Twitter relies on understanding the values influencing those decisions, whether made by individuals or by algorithms.

Researchers in other fields have explored the decision-making factors that shape how people assign information value, making frequent mention of the importance of context in prioritization. In public policy, for example, government information flows have been studied in the context of information overload with a focus on prioritization.

"Policymakers, generally speaking, are in an information-rich world in which they must rank information by its relevance. The task for decision makers in these circumstances is to find strategies for prioritizing the confusing and often contradictory signals they receive. Oversupply calls not for search, but for prioritization" (Workman et al., 2009, p. 78).

The policy sciences approach, especially, is designed to marshal information to aid decision making in complex contexts. "The essential purpose [of the policy sciences approach] is to enable the policy analyst, and hopefully the decision-maker, to find his way in the complexities of the total situation in which he operates" (Lasswell, 1971, p. 67). In communication studies, Saunders and Jones (1990) also focus on context, noting that prioritization of source and medium is an organizational strategy for managing information overload. Supporting these views, Anderson's work in cognitive science and psychonomics concludes that value-driven attention is context specific, such that "different contexts evoke different value priors that the attention system uses to assign priority" (2015, p. 750).

In information science, Sperber and Wilson's Relevance Theory (2002, 2004) draws on cognitive science to problematize the relationship between an utterance and its interpretation. The theory is premised on the belief that the search for relevance is a basic component of human cognition, which gives rise to relevance expectations in response to utterances. These expectations are described as both precise and predictable enough to guide the hearer to the speaker's intended meaning. This relationship between context and expectation is important in the analysis of news organizations' information practice, as online news tweets are evaluated for their relevance to [or by ?] their intended audiences. "The aim is to explain in cognitively realistic terms what these expectations of relevance amount to, and how they might contribute to an empirically plausible account of comprehension" (Sperber & Wilson, 2004, pp. 607-608).

This theory resonates with Dervin's notion of sense making (1983, 1992) in that both concepts draw from the natural human tendency to interpret information in the context of one's existing knowledge. "Information processing and use are, within the context of relativistic assumptions about information, sense-making activities. The emphasis here is on the word 'making' for it denotes that the perceiver of the information is not an empty bucket but is actively making sense" (Dervin, 1983, pp. 164-165). Sperber and Wilson note that "[t]he most important type of cognitive effect achieved by processing an input in a context is a contextual implication, a conclusion deducible from the input and the context together, but from neither input nor context alone" (2004, pp. 607-608). Thus, the notion of relevance is contingent on context, as well as on the existing knowledge base and sense-making capabilities of the person perceiving the utterance.

Relevance Theory is based on two principles. The Cognitive Principle asserts that human understanding results from "the maximisation of relevance" (2002, p. 249). The Communicative Principle explains "that utterances create expectations of optimal relevance" (2002, p. 249). These principles are related to the information studies concept of "enoughness"—the determination that retrieved information is satisfactory for ending a search process, given the seeker's time constraints, confidence, and personal investment in its quality—and to Simon's notion of "satisficing" in decision and management science. In other words, individuals and organizations aim to maximize decision making by instituting efficient practices (e.g., routines, systems, and mandates) that yield information that is relevant and sufficient enough to guide decision makers in the prioritization of action.

Relevance Theory arose from Sperber and Wilson's efforts to "to work out in detail one of [Paul] Grice's central claims: that an essential feature of most human communication, both

verbal and non-verbal, is the expression and recognition of intentions" (Sperber & Wilson, 2002, p. 249). In other words, the existence of the utterance carries with it the presumption of relevance within the context at hand. Thus, as an aspect of context, cultural influences on the interpretation of an information item's relevance may be assessed from the perspective of Relevance Theory.

The dynamic decision making that occurs during the search for relevance is similar to the continuous information prioritization of individuals engaged with information in the workplace, as explored in studies of organizational behavior. For example, Workman et al. describe two types of information processing—serial and parallel—and their effects on attention and organizational structures (2009, pp. 78-79). This distinction is useful particularly in conjunction with the notion of "thinking fast and slow" popularized in behavioral science (Kahneman, 2011). Decision scientists have conducted extensive research on the various types of cognitive biases that undermine rational decision making. Of the three contexts from which barriers to successful information practice arise—personal, role-related, and environmental—the personal context (composed of individual physiological, affective, and cognitive attributes) has received disproportionately little examination in studies of information practice (Wilson, 1999; Case, 2012). Cognitive biases, however, have been the subject of numerous studies in other fields, particularly with respect to consumer choice and judgment. For example, researchers in psychology have advanced a theory in which humans have two cognitive systems: System 1 (quick, effortless, intuitive, and heuristic processes) and System 2 (slow, effortful, reflective, and rule-based processes). Under certain conditions, humans shift gears from analytical thinking (System 2) to heuristic behavior (System 1), which, though efficient, can lead to less-than-optimal decision making (e.g., Stanovich & West, 2000; Kahneman, 2000, 2011). Heuristic decision making entails reliance on mental shortcuts in the absence of complete information.

Although behavioral scientists have studied the biases such as discounting, satisficing, risk assessment, and choice architecture, this research has focused primarily on consumer choice and judgment. Thus far, the effects of cognitive biases on information practice have been the subject of very few investigations outside the realm of consumer purchasing decisions and collective decision making, despite the popularity of books advocating behavioral science techniques for improving decision making, such as *Predictably Irrational* and *Nudge* (Ariely, 2009; Thaler & Sunstein, 2009). However, several research findings in behavioral science have potential for application in information studies. For example, the tendency for temporal constraints and cognitive fatigue to trigger System 1 heuristic decision making (Shiv & Fedorkihn, 1999; Todorov et al., 2002; Ascher & Ascher, 2015) seems particularly apt in the digital news context.

Improvements on heuristic decision making can be achieved through iterative reevaluation and reprioritization. It seems logical, then, to think that decision makers not only should be aware of the myriad factors that influence the perceived value of information, but also should revisit their decisions about the importance of the information over time. The dynamic nature of the digital news context may amplify this need for iterative information evaluation to offset diminished decision quality resulting from heuristic decision making. Likewise, Connolly (1977) notes that decision making is a dynamic process, emphasizing that to understand information processing in organizations, one must examine the interrelationships among decisions and communication (Saunders & Jones, 1990, p. 30). Thus, the organizational structure as context, too, affects information practice.

Simon (1976) also addresses the role of organizational structures in decision making. He explains that organizational structures can impose value premises on the decision maker, which

form the basis for individual choices. The imposition of value premises creates expectations for decision making. Thus, an organization's structure can direct the decision maker's attention in ways that influence individual decisions to ensure they are in line with organizational objectives (Saunders & Jones, 1990, p. 36). Further, organizational roles derive from shared behavioral expectations, which also can be constrained by the organizational structure (Saunders & Jones, p. 36; Stryker, 1983). While understanding the interrelationships among decision making, communication, and organizational structure is important, it will not provide a complete view of the forces that influence prioritization. The information context, inclusive of cultural factors such as time orientation, is among the other forces that also should be explored.

One may think about the relationship between values and social interaction in terms of decision rules. Each individual has a unique set of policies that govern her decision making, and which are instilled through a combination of individual, social, and cultural experiences. These policies help individuals ensure their decision outcomes are aligned with their respective values. Thus, in the digital news context, editorial decisions about the relative value of information result in the prioritization of news items, and this prioritization reflects the values of the decision maker and the context in which the decisions are made. Decision rules reflect values regardless of whether the decision maker is human or algorithm. Further, these values are the building blocks of identity, defined as "a conception of self organized into rules for matching action to situations" (March, 1994, p. 61). It follows, then, that a news organization's identity, or reputation, is created by decision outcomes that enact its values. For this discussion of prioritization as a reflection of values, it is important to understand that expectations arise among the readership in response to a news provider's identity and reputation.

Cognitively, news prioritization that meets a reader's expectations engenders trust. This may be understood best, perhaps, in the context of reputation. For example, *The Korea Times* has a reputation among Korean-Americans as a trustworthy, community-focused news provider; this reputation stems from a long history of the organization's resistance to censorship and influence by the government of South Korea (Park, 2004). Prioritization as a reflection of values implies that readers of *The Korea Times*, known for its "dedication to the Korean-American community….to provide the community with quality journalism, while displaying dedication to community services" (Korea Times, 2015), have certain expectations about how decisions are made with respect to news coverage. Violations of these expectations create cognitive dissonance—psychological discomfort arising from information that conflicts with what one believes to be true—which can result in a range of responses, from mild irritation to cancelled subscription (Burgoon, 1995; Festinger, 1962). It should be noted that aversion to cognitive dissonance is a tenet of both Cognitive Dissonance Theory and Expectancy Violations Theory; both theories inform our understanding of news consumer behavior and the prioritization of news items for social media distribution.

In his Theory of Cognitive Dissonance, Festinger establishes not only that people experience cognitive dissonance, but also that it is a catalyst for information avoidance, modification of situational frames, and confirmation seeking (1962). Similarly, the cognitive dissonance implicit in Expectancy Violations Theory occurs when a communication differs from what its receiver expects. Further, "each culture will have its own set of expectancies for a given type of encounter" (Burgoon, 1995, 152).

Simon's observation that expectations arise from organizational structure also informed my analysis of existing information practice models and the development of the TAFIP.

Consistent with (and predating) Burgoon's Expectancy Violations Theory, Simon explains that, within an organizational context, unanticipated outcomes—both negative and positive surprises—are the result of information prioritization according to value premises that vary from those imposed by the organizational structure (1976). In other words, employees make decisions based on (1) their own culturally informed values and (2) the values conveyed through the structure of the organization. As Schwartz describes, "[t]he relative importance of multiple values guides action" (2012, p. 4). Prioritizing action according to the relative importance of multiple values, then, occurs when values are judged to be (1) relevant in the context, and (2) important to the decision maker. Thus, the decision to act is influenced by the context; this research aims to demonstrate that this context includes cultural time orientation.

Moreover, despite early theories that the internet would liberate communication from prejudice and biases (e.g., Spears & Lea, 1994), researchers have established that socioemotional cues can be conveyed through computer-mediated communications (CMCs) (Rice & Love, 1987), and that these cues can affect the recipients of such messages (Hancock et al., 2008). Further, expectancies can be conveyed through CMCs in similar fashion (Tong & Walther, 2012, p. 192). In other words, when people communicate online, their messages convey socioemotional cues and expectancies, which can influence the behavior of others. Thus, social media posts are imbued with the prejudices and biases, even (and, sometimes, especially) on the internet.

2.4 Analyzing Existing Models of Information Practice

To determine how existing models of information practice facilitate an understanding of cultural time orientation, I analyzed 36 models from the literature on information-seeking behavior, information retrieval, and information processing across several fields. I identified the models over time, beginning with those described by Case in his 2012 *Looking for Information,*

and then adding information models that are cited frequently in research on information and

decision making. See Table 2.1 for a list of the models examined. Although several of the

information practice models either include time as a resource or involve an implied time

pressure, a general lack of attention to cultural influences on information practice has limited our

understanding of time in the context of information.

Table 2.1 Information Practice Models

Year	Researcher(s)	Model
1980	Ingwersen	Users in Context
1981	Wilson	Model of Information Behaviour
1983	Dervin	Sense-Making Model
	Krikelas	Model of Information-Seeking Behavior
1984	Ingwersen	Psychological Aspects of Information Retrieval
	Wilson	Model of Information Behaviour
1989	Bates	Berrypicking Model of Information Retrieval
	Ellis	Behavioural Model for Information Retrieval System Design
1992	Dervin	Sense-Making Model
1993	Johnson & Meischke	Comprehensive Model of Information-Seeking
1994	Buckland	Basic Model of Information Retrieval Systems
1995	Belkin	Episode Model
	Byström & Järvelin	The Work Chart Structure
1996	Ingwersen	Cognitive Model of Interactive Information Retrieval
		Model of the IR Process
	Leckie	General Model of the Information Seeking of Professionals
	Leckie, Pettigrew, & Sylvain	Information Seeking of Professionals Model
	Saracevic	Stratified Interactive Model of Information Behavior
	Wilson	Model of Information Behaviour
1997	Spink	Model of the Information Search Process
1999	Byström	Model of Task-Based Information Seeking
	Nardi & O'Day	Information Ecologies
	Sonnenwald	Framework for Information-Seeking
	Wilson	Model of the IR Process
		Nested Model of Conceptual Areas
2001	Vakkari	Theory of the Task-Based IR Process
2003	Niedźwiedzka	General Model of Information Behaviour
2004	Foster	Non-Linear Model of Information Seeking Behaviour
	Ingwersen & Järvelin	General Analytical Model of Information Seeking and Retrieval
	Kuhlthau	Model of the Information-Search Process
2005	Foster	Non-Linear Model of Information Seeking Behaviour
2006	Blake & Pratt	Collaborative Information Synthesis (CIS) Model
	Fisher & Naumer	Information Grounds
	Spink & Cole	Evolutionary Model
2008	Knight & Spink	Web Search Information Behavior Model
2009	Johnson	Impressionistic Mapping of Information Behavior with Special Attention to Contexts, Rationality, and Ignorance
2013	Zhang	Layered Model of Context for Health Information Searching

2.4.1 Instrumental facets of information practice models

My analysis of models of information practice began with an elementary comparison of features, and evolved into an examination of the types of activities that each model facilitates or constrains. Five general categories arose: (1) Surprise, (2) Sequence, (3) Aim, (4) Query Type, and (5) Context. These features of the models and the activities they support were key considerations in the development of the Time Analytic Model for Information Practice (TAFIP).

2.4.1.1 Surprise

Traditional decision making theory assumes conditions of perfect information for knowledge transfer: knowledge transfer occurs when perfect information is understood by decision makers in the ways intended by the parties providing the information. Of course, such ideal conditions are impossible (Feldman & March, 1981). However, in pursuit of the elusive state of perfect information, organizations examine the information practices of employees, teams, units, and divisions to identify instances in which the lack, misinterpretation, and abuse of information jeopardizes knowledge transfer. In other words, organizational knowledge management means getting the right information to the right people at the right time to facilitate decision making that prevents negative surprises and is conducive to positive surprises (Drucker, 2005). Laurent Itti and Pierre Baldi articulate a Bayesian Theory of Surprise that requires two conditions: (1) uncertainty and (2) relative, subjective description related to the expectations of the observer (2005). Both of these conditions exist during the prioritization of news items for social media distribution, just as they do in policymaking. "A range of values is normally associated with a particular issue," explains Zahariadis. "Changes in specific conditions may violate those values and therefore activate interest and attention. People define conditions as problems by letting their values and beliefs guide their decisions, by placing subjects under one category rather than another, by comparing current to past performance, and by comparing

conditions" (Zahariadis, 2007, p. 71). By focusing on aspects of the information context that are prone to misinterpretation and misunderstanding, and comparing these aspects across different cultures, we may find ways to improve this process, in particular, and decision making, in general. This approach has been used in other fields, such as organizational behavior. For example, Louis studied employee onboarding practices in organizations, focusing on aspects that were prone to misinterpretation and misunderstanding (1980). Surprise played a key role in her study, as well. Louis takes a socialization perspective approach to her analysis of factors that affect organizational onboarding, and describes the socialization of new employees in a manner similar to Kuhlthau's 2004 sense-making process. This approach was useful in conceptualizing the present research design, which focuses on the ways in which cultural time orientation may lead to unexpected outcomes. As such, surprise became a focal point of interest in analyzing existing models of information practice.

2.4.1.2 Sequence

The order in which information agents conduct their activities is prominent in many models of information practice. Assumptions about how people go about their tasks inevitably are embedded in the models, and most depict a linear process. Such processes tend to begin with a recognized need for information; delineate the path by which the information user queries, locates, and obtains the desired information; and end with satisfaction or dissatisfaction based on whether the information need is sated. A handful of non-linear information practice models depict more flexible sequences of activities (e.g., Bates, 1989; Ingwersen, 1980; Sonnenwald, 2001). A few of these models are designed to represent opportunities for encountering information and/or iterative feedback loops that may influence the ways in which people query, locate, and acquire information. Thus, sequence of activity was identified as a facet that may

contribute to the flexibility of an information practice model that can accommodate culturally variable interpretations of information throughout the process of engaging with information.

2.4.1.3 Aim

Most of the information practice models examined are premised on the assumption that an information user is seeking information to resolve the anxiety created by a recognized information gap (e.g., Belkin, 1995; Kuhlthau, 2004; Saracevic, 1996, Wilson, 1981). It is important to distinguish such problem-focused models from awareness-focused (e.g., Ellis, 1989; Sonnenwald, 1999) and entertainment-focused (e.g., Vivian, 1995) frameworks, as these varied aims undoubtedly influence information practice. To date, no studies have focused on variations in the goals of information practice models by culture. I chose to call out this facet to provide distinctions among the models in terms of purpose, reflecting the notion of embedded intent through socioemotional cues and expectancies described previously.

2.4.1.4 Query type

Query type emerged as the fourth significant facet in my analysis of information practice models. Systems with a fixed, static query tend to correlate with linear, goal-oriented models (e.g., Byström & Järvelin, 1995; Ellis, 1999; Krikelas, 1983). In contrast, a handful of models capable of an evolving search (e.g., Bates, 1989; Johnson, 2009; Sonnenwald, 2001)—in which the information agent adjusts the search query throughout the process—seem to demonstrate the utility of iterative feedback loops, ongoing relevance judgments, and meandering paths that are conducive to serendipity, what I call positive surprises. The relationship between serendipity and innovation as described by Csikszentmihályi in his Theory of Flow (1990b) contributed to this categorization, and is important to the role of news heterogeneity in the formation of public opinion.

2.4.1.5 Context

In the past 15 years, information practice research in the field of information studies has begun to shift away from examining source and channel use toward studies of encountering, seeking, and ascribing meaning to information (Case, 2012, p. 279), or, more centrally, to sense making (Dervin, 1992; Weick, 1995, 2000). This shift has made way for a focus on the information context, which is evident in the evolution of models of information practice over time. Thus, aspects of the information models that enable the ability to accommodate cultural influences as a subset of the information context were considered important for the development of the TAFIP.

Once the 36 information practice models were classified according to the five facets described, I contemplated how decision making and time are represented in each model. This was important to the development of the TAFIP as a framework to help researchers identify practices that are vulnerable to misinterpretation as a result of cultural differences.

People have a tacit understanding that time constrains decision making. Researchers have studied this constraint and devised multiple models of decision making (frequently called models of decision making under uncertainty). Diederich explains that decision making models tend to derive from one of two approaches. Decision rule (strategy) selection models entail a cost/benefit approach and are vulnerable to stress created by time constraints (Diederich, 1997, p. 260), whereas sequential comparison models involve a dynamic comparison of the features of choice alternatives over time. She explains that "[t]he main difference among these models is how information about the choice alternatives is selected, evaluated, and integrated with the evaluations" (Diederich, 1997, pp. 260-261). Her multiattribute dynamic decision model (MADD) posits that decision makers rely on attributes of choice alternatives as memory cues, which help retrieve information about the potential consequences of each choice within a

cognitive deliberation process. "The anticipated consequences are retrieved from a complex associative memory process and it takes time to retrieve, compare and integrate the comparisons" (Diederich, 1997, p. 261). The process Diederich describes is one approach to understanding how people switch between System 1 and System 2 modes of thinking during the decision process, based on competing demands for the decision maker's attention in a time-constrained context.

As mentioned, the notion of time as a scarce universal resource has evolved to encompass multiple types of time, coexisting simultaneously. This postmodern pluri-temporality (or, polychronicity) emphasizes individual, social, organizational, and cultural contexts (Ballard & Siebold, 2003, 2004; Giddens, 1984; Nowotny, 1992; Rifkin, 1987). News prioritization is a compelling information practice for studying this phenomenon. The confluence of technological innovation and expectations of instantaneous information provision has created a "come to Jesus" moment for many in the time-sensitive news industry. "The difficulty of producing insightful and accurate news stories in the face of demands for instant coverage makes some journalists question whether the news profession is still the right field for them" (Gardner et al., 2001, p. 141).

Though time (as a context) is a recent topic of interest in information studies, it has been the subject of extensive research in many other fields, such as behavioral science, business, cultural studies, economics, management, organizational behavior, organizational communication, political science, psychology, public policy, and sociology. In the past 25 years, several information studies researchers have called for a focus on time as a type or component of information context (e.g., Erdelez, 1995; Fry, 2006; Giddens, 1984; Johnson, 2013; Savolainen, 1995; Solomon, 1999; Vakkari, 1997). This call is amplified by academics and thought leaders heralding the transition from a capitalist society to one based on a collaborative commons

operating at low or near-zero marginal cost, as well as champions of globalization. Such changes in the world economy create an imperative need for understanding how people from different backgrounds engage with information. As these changes permeate the workplace, it behooves organizations to recognize how cultural time orientation may be leveraged to adjust to a "post-market era that will follow on the heels of the Third Industrial Revolution" (Rifkin, 1995, p. 293).

Rifkin—who in 1987 called attention to the potential effects of the internet's nanosecond culture—explains that, throughout history, competing temporal visions have been at the core of political battles, and that changes in civilization occur alongside shifts in the conceptualization of time. More recently, Rifkin (2014) has asked what will happen when the Internet of Things (IoT) enables the automation of entire industries in the transition from a capitalist economy to one that is part capitalist market, part collaborative commons. This looming question motivated my decision to investigate cultural time orientation in the workplace. If there are implications for cultural time orientation in the workplace of yesteryear, it is imperative that they are understood as we transition to the workplace of the future. Further, the study will offer insights to IoT researchers.

Scholars such as Savolainen, Solomon, Vakkari, MacKenzie, and Zhang have begun to problematize the role of time as a contextual factor in information practice. Characterizations of time as a context of information practice (Savolainen, 2006) and findings that productivity is affected by the time value of information and the timing of its acquisition (Solomon, 1997, p. 1107) have helped to highlight the potential insights that may be gained by exploring time in information practice. However, such investigations should be broadened to include non-Western conceptualizations of time. As a first step in this extension, the dissertation research presented in

the remainder of this manuscript focuses on time orientation as a key cultural feature of information contexts and practices in three digital news production organizations.

2.5 Time and Models of Information Practice

As described earlier, the analysis of models of information practice began with an elementary comparison of features, and evolved into an examination of the types of activities that each model can represent. Five general categories arose that guided the development of a tentative framework for investigating the influence of cultural time orientation in information practice: surprise, sequence, aim, query type, and context/culture. A description of the findings of this analysis follows.

In his comprehensive review of time as "one of the main contextual factors of information seeking," Savolainen notes that the increasing popularity of networked sources has contributed to a focus among information studies researchers on what can be done to mitigate spatial and temporal barriers of information seeking. Variously, the concept of time in these studies refers to duration of search, frequency/regularity in information source use, and a continuum during which changes in relevance judgments occur throughout the information-seeking process. Savolainen delineates several implied references to temporal context in the literature, including the anticipation of future information needs (Bruce, 2005, as cited in Savolainen, 2006, p. 111); multiplicity of information-seeking episodes (Lin & Belkin, 2000, as cited in Savolainen, 2006, p. 111); the non-spatial continuum in which actions and events occur and the concepts of episode, interval, and eon (Sonnenwald & Iivonen, 1999, as cited in Savolainen, 2006, p. 111); and interactive episodes and time as factors of information retrieval and human information behavior (Spink et al., 2002, as cited in Savolainen, 2006, p. 111). Savolainen concentrates this first exploration of time as a context of information practice on

information-seeking activity and source selection and use. He also relates several challenges to a universal definition of time, including issues of ontology (Heidegger, 1978); the entanglement of time and space; and the lack of explicit elaboration of the temporal context in existing information practice models. He indicates that there is no consensus among information studies researchers as to the relationship between situation, context, and temporal factors (Cool, 2001; Edwards & Poston-Anderson, 1996; Hektor, 2001, as cited in Savolainen, 2006, p. 113-114), except to note that temporal factors are elements of situation and context. "Ultimately, temporal factors become real as constitutive elements of contexts only through human practices" (Savolainen, 2006, p. 113).

2.5.1 Problem-solving models

Several of the models examined are built on the premise that an information seeker has a problem to solve. Such models of information seeking aim to help researchers understand how people navigate from a state of uncertainty arising from an information gap—a discrepancy between current and desired data, understanding, or knowledge—to a state of understanding through "a conscious effort to acquire information" (Case, 2012, p. 5). Spink characterizes information seeking as an evolutionary survival mechanism (Spink & Cole, 2006, p. 29). This perspective is bolstered and well summarized by Marchionini and White: "Information seeking is a fundamental human activity that provides many of the 'raw materials' for planned behavior, decision making, and the production of new information products" (Marchionini & White, 2009, p. 7; Rice, McCreadie, & Chang, 2001).

These solution-focused models of information practice allow for a single definition of the search query at the beginning of a linear process through which an information agent (e.g., user, seeker, creator, possessor) engages in an active search for information that bridges the gap

between the individual's current and desired states of knowledge. For example, Belkin's Episode Model represents a sequence of interactions between the information agent and the information system. Factors that influence how these interactions occur include the user's goals, intentions, and existing state of knowledge; the types and attributes of the information objects held in the system; and the nature of the problem to be solved (Belkin et al., 1995). Similarly, Dervin's Sense-Making Model employs neutral questioning to aid in understanding the nature of the information problem. The focus of this linear model, like those preceding it, remains squarely on the ability of the retrieved document to bridge the problematic knowledge gap (Dervin, 1992). As such, the model makes a few questionable assumptions, such as: (1) the user is aware of his knowledge gaps and actively seeks information to bridge them, and (2) types and feelings of uncertainty are of a universal sort, without the potential for fluctuation or variability over time or among individuals. The most recent of Wilson's Models of Information Behavior focuses on contextual complexity by incorporating iterative feedback loops at various points in the information-seeking process. Drawing from stress/coping theory, risk-reward theory, and social learning theory research in other fields, Wilson retains the basic framework of his first model, but introduces "intervening variables" that mediate the information agent's information-seeking behavior. Wilson's explicit hypothesis that people from different backgrounds will behave differently reflects the contextual turn in information studies (Wilson, 1981, 1996, 1997, 1999).

2.5.2 Awareness models

Of the models examined, a handful focus on awareness, rather than solving problems. These linear models depend on the information agent's ability to define a single automated search query that returns relevant information. Such models are important to consider because they depend on assumptions of prioritization and resource allocation that likely vary according to

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contextual factors. For example, Ellis's Behavioural Model for Information Retrieval System Design outsources the exhaustive, comprehensive aspects of the search task to the retrieval system once the most salient, relevant ideas are ascertained by the user. Not only must the system have a thesaurus structure to accommodate broad and narrow subject headings, but it also must have the capacity to move backward and forward through citations and references to "ensure the searcher has exhausted all possible trails" (Ellis, 1989, p. 241). This directional aspect may be considered a deviation from a straightforward linear model, though the refinements and adjustments occur in a discrete phase of the model. The model can also be characterized as a "relevance likelihood" system through which the user identifies relevant themes and the system runs periodic searches to make salient the information that most closely meets the user's relevance criteria. Of course, this creates the risk of excluding related concepts completely should the user not anticipate some stream of tangential material.

Kuhlthau's Model of the Information-Search Process (ISP) expands on Ellis's framework by indicating the feelings, thoughts, and actions exhibited by information agents along a continuum of information task stages: Initiation, Selection, Exploration, Formulation, Collection, Presentation, and Assessment. However, as Wilson explains, "the two models are fundamentally opposed in the minds of the authors: Kuhlthau posits stages on the basis of her analysis of behaviour, while Ellis suggests that the sequences of behavioural characteristics may vary" (Wilson, 1999, p. 256). The novelty of this model when introduced in 1991 was its affordance for gradual adjustment of the problem definition as the information agent conducts various activities over time. Intuitively, one might associate the stages of the ISP model visualization with a linear timeline of sorts, indicating the affective, cognitive, and physical states expected during each stage. However, Kuhlthau refutes this association:

"I would argue that it is a sequential model rather than a linear model. The ISP is experienced as a sequence of one thing after another in a period of time. This is the way life is lived and experienced. Of course there may be some planning within each stage for the stages to follow and reflection in what went on before. Still one event follows another in a sequence even though recursion and planning may be evident within each of the stages" (Kuhlthau, 2007, pp. 3-4).

Here, Kuhlthau draws a distinction between linear and sequential models of information practice. Nonetheless, the sequential stages can be plotted along a linear timeline. As such, Kuhlthau's model was novel in its ability to accommodate an evolving search, but would be considered by many to fall short of the criteria for non-linearity possessed by other, more recent models.

2.5.3 Implicit time orientation in models of information practice

None of the models described thus far addresses cultural time orientation as a factor in information practice. Although time is not referenced explicitly in Wilson's models, one can surmise that the various barriers to information seeking, acquisition, and use contribute to the duration of the information search process, and add complexity to the cost-benefit analysis that information agents undertake in determining how much effort and time to invest in locating, acquiring, and using the information sought for the task at hand. Likewise, while the episodic nature of Belkin's model is necessarily temporal, there is no indication that time orientation is a factor in the user's information practice. Similarly, the relevance judgments and problem refinement that occur throughout Kuhlthau's ISP likely are influenced by cultural traits, but the model itself does not seem to reflect this influence. Kulthau's "zones of intervention" mark opportunities at which an information agent would benefit from assistance; it is conceivable that the anxiety arising from uncertainty at these moments is contingent on the seeker's time orientation.

In addition, though time is referenced explicitly in Dervin's model, it is conceived as a sequence of actions taken by the information agent in order to locate information to bridge a recognized and catalyzing information gap. Any conceptualization of time orientation in Dervin's model is constrained to the moment an information gap is recognized and an information search begins.

This focus on cognitive functioning and chronological time may appear to have little to do with a user's cultural time orientation. However, other researchers, such as Ingwersen and Saracevic, have associated information system users' cognitive structures with individuals' backgrounds and experiences, which certainly are informed by cultural traits such as time orientation (Ingwersen, 1980, 1984; Saracevic et al., 1988). Finally, time is implicit to Ellis's model in several ways, particularly in its focus on efficient use of the searcher's time. Time is also implicit in the notion of the frequency of the system running pre-programmed search routines. The ability for the user to broaden or narrow the automated search function based on the quantity of results retrieved implies a fluctuation in the amount of relevant information over time. This measure, amount of information, reveals an unavoidable limitation of the schema, as the algorithm can measure only quantity, not quality. This notion of "set it and forget it" calls to mind Belkin's assertion that "true intelligence in information retrieval resides in appropriate allocation of responsibility amongst all the actors in the information retrieval system, and that intelligent information retrieval will be achieved through effective support of people in their various interactions with information" (Belkin, 1996, p. 25). It is interesting that Ellis's model accommodates revision of the search query when the amount of information is insufficient, but does not permit revision on the basis of relevance feedback from the information agent. In addition to these implicit temporal aspects, Ellis's model accounts for variations in information

behavior activities throughout a user's career, which may be taken to be temporal in nature. However, there is no consideration of different information search activities stemming from various cultural time orientations. Perhaps most indicative of a lack of recognition of cultural time orientation is the assumption on which the model rests, that efficiency is the most highly valued attribute of an information retrieval system. This premise, while certainly true for users in past/present time oriented cultures, may not hold for cultures that prioritize future outcomes over present experience. The model focuses on a strategic relevance system that reserves the user's time for search refinement in terms of the amount of material necessary to maintain a desired awareness of sources relevant to the research query.

In contrast, Krikelas's characterization of information needs as either immediate or deferred and his conceptualization of a user's hierarchy of source preferences are perhaps the most explicit incidents of time orientation in a problem-focused model of information-seeking behavior. In this model, the types of information required to meet immediate versus deferred needs are perceived to be of a different nature. As a result, the information practice exhibited in each type of information scenario is different. Thus, Krikelas concludes, the nature of the problem causing uncertainty may be more important in predicting information practice than are personal or work characteristics (Krikelas, 1983, pp. 8-15). This is interesting, because one could say that the nature of the problem (as more or less immediate or deferred) viewed through one cultural lens would be different if viewed through another, which is a productive point of argument for time orientation as a factor in information practice.

Unlike the linear models of information practice that commence with the information agent's single search query, several non-linear models depict what Bates calls "evolving search" (Bates, 1989, p. 410). Bates's Berrypicking Model of Information Retrieval is a non-linear

information retrieval model that focuses on the sequence of the user's behavior to demonstrate how the user adapts her strategy dynamically throughout the search process. The assertion that the user's understanding (and, therefore, the search query) evolves over time differentiates Bates's model from the classic model of information retrieval, which conceptualizes "the query...as a single unitary, one-time conception of the problem" (Bates, 1989, p. 410). Bates also notes the benefit of browsing for "the juxtaposition, in time or space, of different ideas or documents that stimulate the thinking of the information searcher" (Bates, 1989, p. 422). Thus, the ability to shift gears and encounter information in a seemingly unpredictable pattern creates opportunities for creativity and innovation. However, if the sequence of behavior becomes routine, it seems likely that these opportunities would diminish.

Another non-linear model, Sonnenwald's Framework for Information-Seeking, is emblematic of the shift from designing systems and structures that eliminate human intermediaries to creating densely populated information horizons that serve as rich sources of information. Sonnenwald notes the importance of thinking of human information behavior as a process involving cognitive, affective, and contextual factors. From this basis, she explains that information behavior is constructed in the midst of reflections on and evaluations of change. Unlike prior models, her framework includes the notable provision of information in contexts where no information need has been expressed, allowing for information sharing in anticipation of a yet-to-be-identified lack of knowledge. In Sonnenwald's framework, information needs and the resources to sate them are determined socially and individually within an information horizon. Communication and collaboration tools exist within information horizons to assist users in resolving knowledge gaps. "[T]he information horizon map provides data about the information seeking process, in particular, about relationships among information resources or

individuals' preferences for information resources at various times during the information seeking process" (Sonnenwald, 2001, p. 15). Her non-linear approach permits the characterization of multiple situations (sets of related activities or stories occurring over time) within a context. "A context is somehow larger than a situation and may consist of a variety of situations; different contexts may have different possible types of situations….That is, we can characterize or describe situations by actions or behavior that occur over time, and which are perceived as being connected by participants and/or outsiders" (Sonnenwald, 1999, p. 180). Within any context, situations may arise non-linearly and be approached in a non-sequential fashion.

The variety of socio-cultural contexts accommodated by Sonnenwald's information horizon is similar to the vast knowledge context of Bates's model. In both frameworks, the search query is dynamic and may be refined over time in response to serendipitous information encounters, as well as cognitive, affective, and contextual factors. Bates indicates that the purpose of her model is "to find ways to devise databases and search interfaces that enable searchers to operate in ways that feel natural" (Bates, 1989, p. 13). It is important to note that information systems are imbued with the creators' cultural worldview, just as "the design of new media techniques carries the imprint of the social-cultural characteristics of its producers" (Van Dijk, 1999, p. 152). Thus, the lenses through which all humans interpret information have significant implications for information systems designers and users, as well as for information managers. In essence, understanding the cultural dimensions of the information context sheds light on why information agents engage with information in the ways that they do. Bates also explains that berrypicking does not "reflect rigid assumptions about the user's goals and style"

(Rouse & Rouse, 1984, as cited in Bates, 1989, p. 22). Such rigid assumptions often have cultural roots.

2.6 Culture

In this section, I discuss the explicit and implicit temporal aspects of several theories of cultural dimensions, and explain why and how cultural time orientation figures prominently in the present exploration of information practice at work, in general, and in the algorithmic turn in digital journalism, specifically. The chapter then continues with a description of the context in which the three news organizations serving as the objects of study in this research are situated, including the cultural time orientations associated with each news organization's readership, and a discussion of the instrumental nature of cultural time orientation in digital journalism.

As mentioned in the introduction, information studies researchers have been calling for a holistic study of the information context for several years (e.g., Fry, 2006; Johnson, 2013; Savolainen, 1995; Solomon, 1999; Vakkari, 1997). However, the influence of culture on the information context is markedly absent from research in information studies. Recently, researchers concerned with this process have investigated myriad contextual elements, including some cultural dimensions. However, as Fisher et al. note, "most of the existing cross-cultural IB (information behavior) research reports differences in behavior, without examining cultural variables to identify why these differences occur" (Fisher, et al., 2005, p. 112). The present study responds to the lack of consideration of cultural dimensions as key factors in information practice with a model designed to highlight the ways in which cultural time orientation may contribute to unanticipated activity in the course of engaging with information. Culture has been investigated in other fields in light of rapid globalization of industrial organizations and increased international interdependence. Certainly, globalization and cross-national

communication create a similar need for understanding the role of cultural dimensions in information practice, as well. The research described in this dissertation aims to mitigate this absence with the introduction of cultural time orientation as a significant aspect of the information context.

The definition of culture employed in this study is adapted from A. L. Kroeber and Clyde Kluckhohn (1952, p. 181), who analyzed 164 definitions of culture to develop their own:

> "Culture consists of patterns, explicit and implicit, of and for behavior acquired and transmitted by symbols, constituting the distinctive achievements of human groups, including their embodiments in artifacts; the essential core of culture consists of traditional (i.e., historically derived and selected) ideas and especially their attached values; cultural systems may on the one hand be considered as products of action, on the other as conditioning elements of further action."

The notion that culture is a state in which expected actions feel natural is reminiscent of Geertz's description of the "primordial attachments" humans have to others based on "the assumed 'givens' of social existence" (Geertz, 1973, p. 259). Such givens are ties that arise out of proximity, kinship, religion, language, and other manifestations of social connection, and represent: "an historically transmitted pattern of meanings embodied in symbols, a system of inherited conceptions expressed in symbolic forms by means of which men communicate, perpetuate, and develop their knowledge about and attitudes toward life" (Geertz, 1973, p. 89). Most interestingly, these ties are:

> "the result not merely of personal affection, practical necessity, common interest, or incurred obligation, but at least in great part by virtue of some unaccountable absolute import attributed to the very tie itself.…But for virtually every person, in every society, at almost all times, some attachments seem to flow more from a sense of *natural*—some would say spiritual—affinity than from social interaction" (Geertz, 1973, pp. 259-260, emphasis added).

Therefore, culture is, by definition, a collection of behaviors [perceived by the actors as natural] that reflect the values, beliefs, attitudes, and preferences of a group. This definition is selected partly due to its resonance with Bates's appeal "to find ways to devise databases and search interfaces that enable searchers to operate in ways that feel *natural*" (Bates, 1989, pp. 259-260, emphasis added). In addition, this definition of culture as a collection of "natural" behaviors is selected to emphasize the connection between sociocultural value hierarchies and information valuation. In other words, the ways people assign value to information—operationalized as information prioritization—are shaped by cultural values, such as time orientation. Finally, this conceptualization of culture lends itself well to network analysis, in which the ties among network nodes—in this study, among people and among tweets—may reflect the "primordial attachments," or sense of belonging to a community.

2.6.1 Cultural time orientation

Cultural time orientation is the temporal lens through which one sees the world. Of all of the cultural dimensions delineated by Hofstede and other cultural scholars, time orientation not only is likely to have a significant effect on how people engage with information, but it is also one of the least studied. A comparison of the temporal cultural dimensions described by the six most frequently referenced scholarly characterizations of culture follows in chronological order, along with an analysis of an attempt to synthesize them. The section concludes with a discussion of the rationale for the selection of Hofstede's conceptualization of long-term orientation as the metric for assessing cultural time orientation in the study.

2.6.1.1 Edward T. Hall, 1959

Edward T. Hall's work on cultural dimensions focuses on communication patterns. Working with students at the U. S. Department of State's Foreign Service Institute, Hall analyzed moments of interaction between members of different cultures. His work emphasizes variations

in cultural norms having to do with the flow of information across context, space, and time. Hall describes context as the amount of information required for effective communication, and distinguishes between two types of context. People in low-context cultures require a significant amount of written and/or oral information for effective communication, while those in high-context cultures require little written and oral information, because they communicate within an information-rich context. Hall examined how people of different cultures (1) communicate through physical space (proxemics) and (2) manage their activities consecutively or simultaneously (chronemics). Monochronic cultures exhibit sequential attention to individual goals, a clear division between work and personal life, and a precise concept of time. Polychronic cultures, in contrast, demonstrate simultaneous attention to multiple goals, amorphous boundaries between work and personal life, and a relative concept of time.

Hall's findings on how people of different cultures approach tasks is relevant to the concept of prioritization in information practice. However, his classifications of cultures as monochronic or polychronic and as high- or low-context are too binary for the purposes of the present research. Table 2.2 summarizes the characteristics of Hall's three cultural dimensions.

Table 2.2 Hall's Cultural Dimensions

Cultural Dimension	Scale	
Context Extent to which the context of a message is as important as the message itself	**Low** Direct and frank communication; message itself conveys its meaning (Germany, United States, Scandinavia)	**High** Much of the meaning in communication is conveyed indirectly through the context surrounding a message (Japan, China)
Space Extent to which people are comfortable sharing physical space with others	**Center of power** Territiorial; need for clearly delineated personal space between themselves and others (United States, Japan)	**Center of community** Communally comfortable sharing personal space with others (Latin America, Arab States)
Time Extent to which people approach one task at a time or multiple tasks simultaneously	**Monochronic** Sequential attention to individual goals; separation of work and personal life; precise concept of time (Germany, United States, Scandinavia)	**Polychronic** Simultaneous attention to multiple goals; integration of work and personal life; relative concept of time (France, Spain, Mexico, Brazil, Arab States)

2.6.1.2 Florence Kluckhohn and Fred Strodtbeck, 1961

Kluckhohn and Strodtbeck (1961) conducted their research in several studies of small communities. They assert that there is a defined set of problems, which is universal in all human groups, and a correlated set of solutions to these problems [are the sets of solutions universal too? Not likely]. In addition, they work from a premise that any given society's dominant value system will fall along a three-point continuum for each of five categories, which can be understood best by the following questions:

> What is the primary mode of activity in a given society?
>
> What do members of a society assume about the nature of people?
>
> What do members of a society assume about the relationship between people and nature?
>
> What do members of a society assume about relationships among people?
>
> What is the society's dominant temporal orientation: past, present or future? (Kluckhohn & Strodtbeck, 1961)

Kluckhohn and Strodtbeck's cultural dimensions are shown in Table 2.3. Their conceptualization of a society's relationship with time is a spectrum describing how people are influenced while making decisions. The spectrum ranges from a temporal orientation influenced by past events and traditions, through one influenced by present circumstances, to one influenced by future prospects.

Table 2.3 Kluckhohn and Strodtbeck's Cultural Dimensions

Cultural Dimension	Scale		
Human activities Beliefs about appropriate goals	**Being** Belief that people should concentrate on living for the moment	**Becoming** Belief that individuals should strive to develop themselves into an integrated whole	**Doing** Belief in striving for goals and accomplishments
Human nature Beliefs about good, neutral, or evil human nature	**Good** Belief that people are inherently good	**Neutral** Belief that people are inherently neutral	**Evil** Belief that people are inherently evil
Relationship with nature Beliefs about the need or responsibility to control nature	**Mastery** Belief that people have need or responsibility to control nature	**Harmony** Belief that people should work with nature to maintain balance	**Subjugation** Belief that individuals must submit to nature
Relationship with people Beliefs about social structure	**Individualistic** Belief that social structure should be arranged based on individuals	**Collateral** Belief that social structure should bebased on groups of individuals with relatively equal status	**Lineal** Belief that social structure should be based on groups with clear and rigid hierarchical relationships
Relationship with time Extent to which past, present, and future influence decisions	**Past** In making decisions, people are principally influenced by past events or traditions	**Present** In making decisions, people are principally influenced by present circumstances	**Future** In making decisions, people are principally influenced by future prospects

Created by the author and adapted from Kluckhohn & Strodtbeck, 1961.

2.6.1.3 Geert Hofstede, 1980

Hofstede's Theory of Cultural Dimensions is perhaps the most popular framework for assessing how a society's culture affects the values of its members and how these foundational belief systems manifest in human behavior. Hofstede developed the framework while he was a manager in IBM Europe's personnel research department. From 1967 through 1973, Hofstede applied factor analyses to the responses of 117,000 IBM employees in 40 countries in an historic matched-sample cross-national survey. The framework—used frequently in cross-cultural studies in the fields of psychology, management, and communication—made it possible to explain quantitatively observed differences in behavior among individuals and groups from different cultural backgrounds. Hofstede describes six scales—Masculinity/Femininity, Uncertainty Avoidance, Power Distance, Individualism/Collectivism, Long-Term versus Short-Term Orientation, and Indulgence/Self-Restraint—along which national cultures may be distinguished. Table 2.4 depicts the characteristics associated with each of Hofstede's cultural dimensions. Over

the past 50 years, Hofstede and other researchers (especially Minkov's analysis of the World Values Survey, 1981-2015) have validated and refined the cultural dimensions, and expanded the database to include survey results for nearly 100 countries, as seen in Figure 2.4.

The present research study draws heavily from Hofstede's Theory of Cultural Dimensions to analyze how time orientation influences information practice. Hofstede's conceptualization of time orientation is represented by a continuum from short-term orientation to long-term orientation, and reflects a culture's outlook on work, life, and relationships. Cultures with short-term time orientations focus on the past and present, and place a high value on tradition and social obligations. Cultures with long-term orientations focus on the future, and place a high value on dedication, hard work, and thrift (Hofstede, 1994). "Long Term Orientation stands for the fostering of virtues oriented towards future rewards, in particular perseverance and thrift. It's [sic] opposite pole, Short Term Orientation, stands for the fostering of virtues related to the past and present, in particular, respect for tradition, preservation of 'face' and fulfilling social obligations" (Hofstede, 2001, p. 359).

Table 2.4 Hofstede's Cultural Dimensions

Cultural Dimension	Scale	
Masculinity/Femininity Assertiveness vs. passivity; material possessions vs. quality of life	**Masculinity** Values material possessions, money, and the pursuit of personal goals (Japan, Austria, Italy, Switzerland, Mexico)	**Femininity** Values strong social relevance, quality of life, and the welfare of others (Sweden, Norway, Netherlands, Costa Rica)
Uncertainty avoidance Degree of uncertainty that can be tolerated and its impact on rule making	**Low** Tolerance for ambiguity; little need for rules to constrain uncertainty (Singapore, Jamaica, Denmark, Sweden, UK)	**High** Intolerance for ambiguity; need for many rules to constrain uncertainty (Greece, Portugal, Uruguay, Japan, France, Spain)
Power distance Beliefs about the appropriate distribution of power in society	**Low** Belief that effective leaders do not need to have substantial amounts of power compared to their subordinates (Austria, Israel, Denmark, Ireland, Norway, Sweden)	**High** Belief that people in positions of authority should have considerable power compared to their subordinates (Malaysia, Mexico, Saudi Arabia)
Individualism/Collectivism Relative importance of individual vs. group interests	**Collectivism** Collectivism: Group interests generally take precedence over individual interests (Japan, Korea, Indonesia, Pakistan, Latin America)	**Individualism** Individualism: Individual interests generally take precedence over group interests (US, Australia, UK, Netherlands, Italy, Scandinavia)
Long-term vs. Short-term Orientation Outlook on work, life, and relationships	**Short-term Orientation** Past and present orientation; values traditions and social obligations (Pakistan, Nigeria, Philippines, Russia)	**Long-Term Orientation** Future orientation; values dedication, hard work, and thrift (China, Korea, Japan, Brazil)

Created by the author and adapted from Hofstede, 1980, 1994, 2001, 2010, 2014.

2.6.1.4 Shalom Schwartz, 1994

Schwartz advocates a more complex model of cultural dimensions, focused on the discernment of societal values according to the motivational goals they represent. These are "desirable transsituational goals, varying in importance, that serve as guiding principles in the life of a person or other social entity" (Schwartz, 1994, p. 21). Schwartz draws a distinction between individual human needs and cultural dimensions. He describes 10 universal individual-level human needs—power, achievement, hedonism, stimulation, self-direction, universalism, benevolence, tradition, conformity, and security—that characterize a person's psychological experience during values-driven everyday activities. Schwartz's cultural-level dimensions focus on societal regulation of human activity, and comprise three continua: Conservatism/Autonomy, Hierarchy/Egalitarianism, and Mastery/Harmony.

Schwartz does not refer explicitly to time in his value orientations. However, a few of the individual dimensions are temporal in nature: universalism, for example, implies a big-picture frame of reference concerning long-term consequences and outlook, and tradition implies an appreciation of the past. Recall that Schwartz's value orientations support the notion that context is instrumental to determining the relative importance of multiple values when prioritizing action. Table 2.5 depicts Schwartz's cultural dimensions.

Table 2.5 Schwartz's Cultural Dimensions

Cultural Dimension		Scale
Conservatism-Autonomy Extent to which individuals are integrated in groups	**Conservatism** Individuals are embedded in a collectivity, finding meaning through participation and identification with a group that shares their way of life	**Autonomy** Individuals are autonomous from groups, finding meaning in their own uniqueness; two types of autonomy: intellectual (independent pursuit of ideas and rights) and affective (independent pursuit of affectively positive experience)
Hierarchy-Egalitarianism Extent to which equality is valued and expected	**Hierarchy** Cultures are organized hierarchically; individuals are socialized to comply with their roles and are sanctioned if they do not	**Egalitarianism** Individuals are seen as moral equals who share basic interests as human beings
Mastery-Harmony Extent to which people seek to change the natural and social world to advance personal or group interests	**Mastery** Individuals value getting ahead through self-assertion and seek to change the natural and social world to advance their personal or group interests	**Harmony** Individuals accept the world as it is and try to preserve it rather than exploit it.

Created by the author and adapted from Schwartz, 1994.

2.6.1.5 Fons Trompenaars and Charles Hampden-Turner, 1998

Trompenaars and Hampden-Turner (1998) conducted a 10-year study of the preferences and values of more than 50,000 managers in 40 countries (primarily, though not exclusively, via survey questionnaires), finding that cultures are distinguishable along seven dimensions: Universalism/Particularism, Individualism/Communitarianism, Specific/Diffuse, Neutral/Emotional, Achievement/Ascription, Sequential Time/Synchronous Time, and Internal Direction/Outer Direction. Table 2.6 presents Trompenaars and Hampden-Turner's cultural dimensions.

Trompenaars and Hampden-Turner's sixth dimension, time perspective, is determined by how people (1) conceive of the relationship among the past, present, and future, and (2) approach the structuring of time. The first aspect is similar to House et al.'s conceptualization of time orientation, and the second aspect is comparable to Hall's monochronic/polychronic spectrum, though there is an added element of interrelation among past, present, and future in the former.

Table 2.6 Trompenaars and Hampden-Turner's Cultural Dimensions

Cultural Dimension		Scale	
Universalism-Particularism Relative importance of applying standardized rules and policies across societal members; role of exceptions in rule enforcement	**Universalism** Reliance on formal rules and policies that are applied equally to everyone (Austria, Germany, Switzerland, United States)		**Particularism** Rules must be tempered by the nature of the situation and the people involved (China, Indonesia, Korea, Venezuela)
Individualism-Collectivism Extent to which people derive their identity from within themselves or their group	**Individualism** Focus on individual achievement and independence (Argentina, Mexico, Nigeria, United States)		**Collectivism** Focus on group achievement and welfare (Japan, Singapore, Thailand)
Specific-Diffuse Extent to which people's various roles are compartmentalized or integrated	**Specific** Clear separation of a person's various roles (Canada, Germany, Sweden, United Kingdom, United States)		**Diffuse** Clear integration of a person's various roles (China, Japan, Mexico, Spain, Venezuela)
Neutral-Affective Extent to which people are free to express their emotions in public	**Neutral** Refrain from showing emotions; hide feelings (Japan, Singapore, United Kingdom)		**Affective** Emotional expressions acceptable or encouraged (Brazil, Italy, Mexico)
Achievement-Ascription Manner in which respect and social status are accorded to people	**Achievement** Respect for earned accomplishments (Austria, Switzerland, United States)		**Ascription** Respect for ascribed or inherited status (Egypt, Hungary, Indonesia, Korea)
Relationship with Environment Extent to which people believe they control the environment or it controls them	**Inner-directed** Focus on controlling the environment (Australia, United Kingdom, United States)		**Outer-directed** Focus on living in harmony with nature (China, Egypt, India, Korea, Sweden)
Time Perspective Relative focus on the past or the future in daily activities	**Past/present oriented** Emphasis on past events and glory (Arab countries, France, Portugal, Spain)		**Future oriented** Emphasis on planning and future possibilities (China, Japan, Korea Sweden, United States)

Created by the author and adapted from Trompenaars & Hampden-Turner, 1998.

2.6.1.6 Robert J. House, Paul J. Hanges, Mansour Javidan, Peter W. Dorfman, and Vipin Gupta, 2004

House et al.'s GLOBE study focuses on how cultural dimensions can affect the behaviors, styles, and effectiveness of leaders. Researchers worldwide contributed to the multi-phase, multi-method project aimed at understanding "the interrelationships between societal culture, organizational culture, and organizational leadership" (House et al., 2004, p. 7).

The GLOBE study describes qualities of leaders on a scale of low to high across nine dimensions: Performance Orientation, Uncertainty Avoidance, Humane Orientation, In-Group Collectivism, Assertiveness, Power Distance, Institutional Collectivism, Gender Egalitarianism, and Future Orientation. Table 2.7 presents the cultural dimensions developed by House et al.

The future orientation dimension reflects the extent to which a culture's members engage in long-term behaviors such as planning, investing, and delayed gratification. Cultures with high future orientation emphasize economic success and saving for the future, valuing intrinsic motivation. Organizations in high future orientation cultures tend to be flexible and adaptive. In contrast, low future orientation cultures place less value on economic success, favoring, instead, instant gratification and valuing extrinsic motivation. Organizations in low future orientation cultures tend to be inflexible and highly bureaucratic.

Incidentally, Gupta, Hanges, and Dorfman (2002) had previously grouped the countries investigated in the GLOBE study into 10 "country clusters" that align nicely with the present study: Anglo cultures, Eastern Europe, Germanic Europe, Latin Europe, Nordic Europe, Latin America, Indigenous Africa, Arabic cultures, Southern Asia, and Confucian (or East) Asia. The clusters corresponding to the three countries selected for the present study are Confucian Asia, Latin Europe, and Anglo cultures.

Table 2.7 House et al.'s Cultural Dimensions

Cultural Dimension	Scale	
	Low	**High**
Performance Orientation Degree to which high performance is encouraged and rewarded	Values harmony with environment over control; emphasizes seniority, loyalty, social relationships, and belongingness; values who people are more than what they do	Belief that individuals are in control of their destinies; values assertiveness, competitiveness, and materialism; emphasizes performance over people
Uncertainty Avoidance Extent to which people rely on norms, rules, and procedures to reduce the unpredictability of future events	Tendency to be more informal in social interactions; reliance on word of trusted people; less concerned with orderliness and record-keeping; reliance on informal norms of behavior	Tendency to formalize social interactions document agreements in legal contracts; be orderly and maintain meticulous records; rely on rules and formal policies
Humane Orientation Extent to which people reward fairness, altruism, and generosity	Self-interest is important; values pleasure, comfort, and self-enjoyment; high need for power and possessions; more psychological and pathological problems	Interests of others important; values altruism, benevolence, kindness, and generosity; high need for belonging and affiliation; fewer psychological and pathological problems
In-Group Collectivism Extent to which individuals express pride, loyalty, and cohesiveness in their organizations and families	Members assume they are independent of the organization and seek to stand out by making individual contributions; short-term employer-employee relationships; organizations primarily interested in the work performed by employees over their personal welfare	Members assume they are interdependent and seek to make important personal contributions to group or organization; long-term employer-employee relationships; organizations assume major responsibility of employee welfare; important decisions made by groups
Assertiveness Degree to which people are assertive, confrontational, and aggressive in relationships with others	Prefers modesty and tenderness to assertiveness; sympathy for the weak; values cooperation; often associates competition with defeat and punishment; values face-saving in communication and action	Value assertiveness, dominance, and tough behavior for all members of society; sympathy for the strong; value competition; belief in success through hard work; values direct and unambiguous communication
Power Distance Degree to which people expect power to be distributed equally	Society has large middle class; power bases are transient and sharable; power often seen as source of curruption, coercion, and dominance; high upward mobility	Society divided into classes; power bases are stable and scarce; power is seen as providing social order; limited upward mobility
Institutional Collectivism Extent to which society encourages collective distribution of resources and collective action	Individuals largely responsible for themselves; self viewed as autonomous; individual goals often take precedence over societal or group goals	Individuals integrated into strong cohesive groups; self viewed as interdependent with groups; societal goals often take precedence over individual goals
Gender Egalitarianism Degree to which gender differences are minimized	Low participation of women in the workforce; fewer women in positions of authority; women not accorded equal status in society	High participation of women in the workforce; more women in positions of authority; women accorded equal status in society
Future Orientation Extent to which people engage in future-oriented behaviors such as planning, investing, and delayed gratification	Less emphasis on economic success; propensity for instant gratification; values extrinsic motivation; organizations tend to be bureaucratic and inflexible	Greater emphasis on economic success; propensity to save for the future; values intrinsic motivation; organizations tend to be flexible and adaptive

Created by the author and adapted from House et al., 2004.

2.6.1.7 Synthesis of cultural dimensions

Nardon and Steers offer an integrated account of cultural dimensions, which adapts these

six prominent models of cultural dimensions "based on their utility for better understanding

business and management in cross-cultural settings" (2009, p. 8). Nardon and Steers synthesize

the work of Hall, Hofstede, House et al., Kluckhohn and Strodtbeck, Schwartz, and Trompenaars

into "core cultural dimensions to reflect both their centrality and commonality in cross-cultural

organizational research" (2009, p. 10). Briefly, these dimensions are classified as: Hierarchy-

Equality, Individualism-Collectivism, Mastery-Harmony, Monochronism-Polychronism, and

Universalism-Particularism (Nardon & Steers, 2009, p. 10).

Unfortunately, the temporal dimension described by Nardon and Steers has lost its

robustness in the distillation to a mere distinction between monochronism and polychronism,

based on Hall's perspective of the extent to which people approach tasks either sequentially or

simultaneously. While it is true that the ways in which people organize their time based on

sequential or simultaneous attention to tasks may be culturally influenced, Nardon and Steers

perpetuate the common misperception that the only aspects of time relevant to the work context

are limited to whether people (1) work linearly or non-linearly, (2) are punctual or late, (3)

separate or integrate work and personal life, and (4) are focused and impatient versus unfocused

and patient. By selecting Hall's monochronic/polychronic dimension to the exclusion of the

other models examined, Nardon and Steers omit several cultural attributes of time that may be

useful to explain unexpected information activity in the digital news organizational environment.

Depending on the values hierarchy of a culture, its people are influenced principally by

past events and/or traditions, present circumstances, or future prospects (Kluckhohn &

Strodtbeck, 1961). Hofstede's model assumes that values hierarchies distinguish cultures from

one another. The temporal dimension, which Hofstede offers as a continuum from short-term

orientation to long-term orientation, reflects a culture's outlook on work, life, and relationships.

Cultures with short-term time orientations focus on the past and present, and place a high value

on tradition and social obligations. Hofstede's conceptualization of long-term time orientation "focuses on the degree [to which] the society embraces, or does not embrace, long-term devotion to traditional, forward thinking values" (Hofstede, N. D.). Countries that rank high on Hofstede's scale of long-term orientation possess a culture that values long-term commitments and tradition, which tend to manifest in a strong work ethic that entails future rewards in exchange for hard work in the present. Low-ranking countries, on the other hand, eschew the traditional long-term time orientation in favor of a culture in which change can occur rapidly, unencumbered by long-term traditions and commitments (Hofstede, N. D.). Trompenaars's time perspective is a cultural dimension describing the relative focus on the past or future in the execution of daily activities. Cultures that focus on the past or present emphasize past successes and triumphs, while future-oriented cultures emphasize planning and future possibilities (Trompenaars, 1993).

To date, nearly 100 nations have been classified according to their cultural conceptualization of time on a scale of cultural time orientation. For example, the United States scores relatively low on the scale, meaning that U. S. society is more focused on short-term objectives and thinks about things from a perspective of immediacy. In contrast, South Korea ranks as the most future time oriented nation, based on its culture's long-term outlook and concern for the future. Figure 2.1 provides long-term time orientation scores from the 2014 World Values Survey for 96 countries and regions in map and chart formats (Hofstede, 2014). The distribution is bound by Puerto Rico (0) and South Korea (100). Finally, Table 2.8 presents a comparison of the temporal cultural dimensions described by the cultural scholars discussed in this section. Table 2.9 is the author's summary of cultural time orientations for analyzing information practice.

Figure 2.1 Time Orientation by National Culture
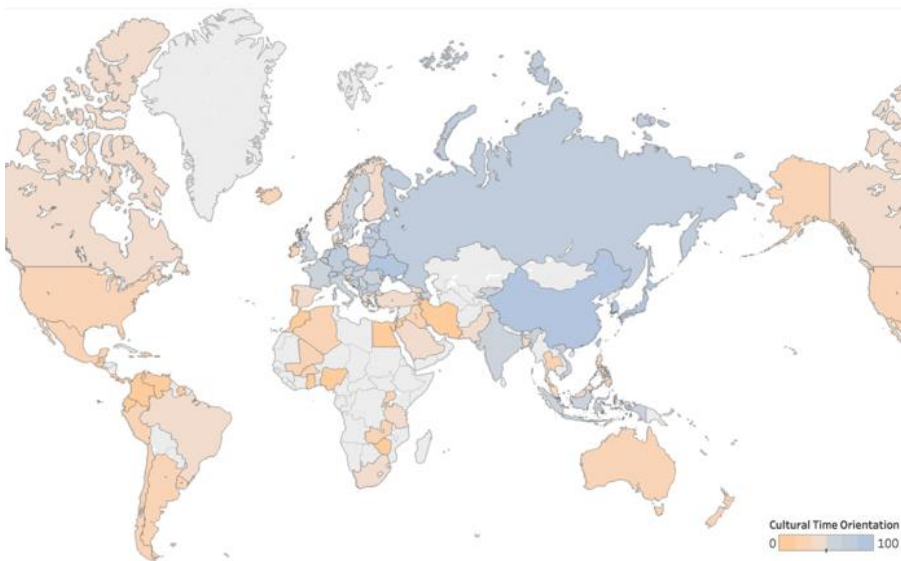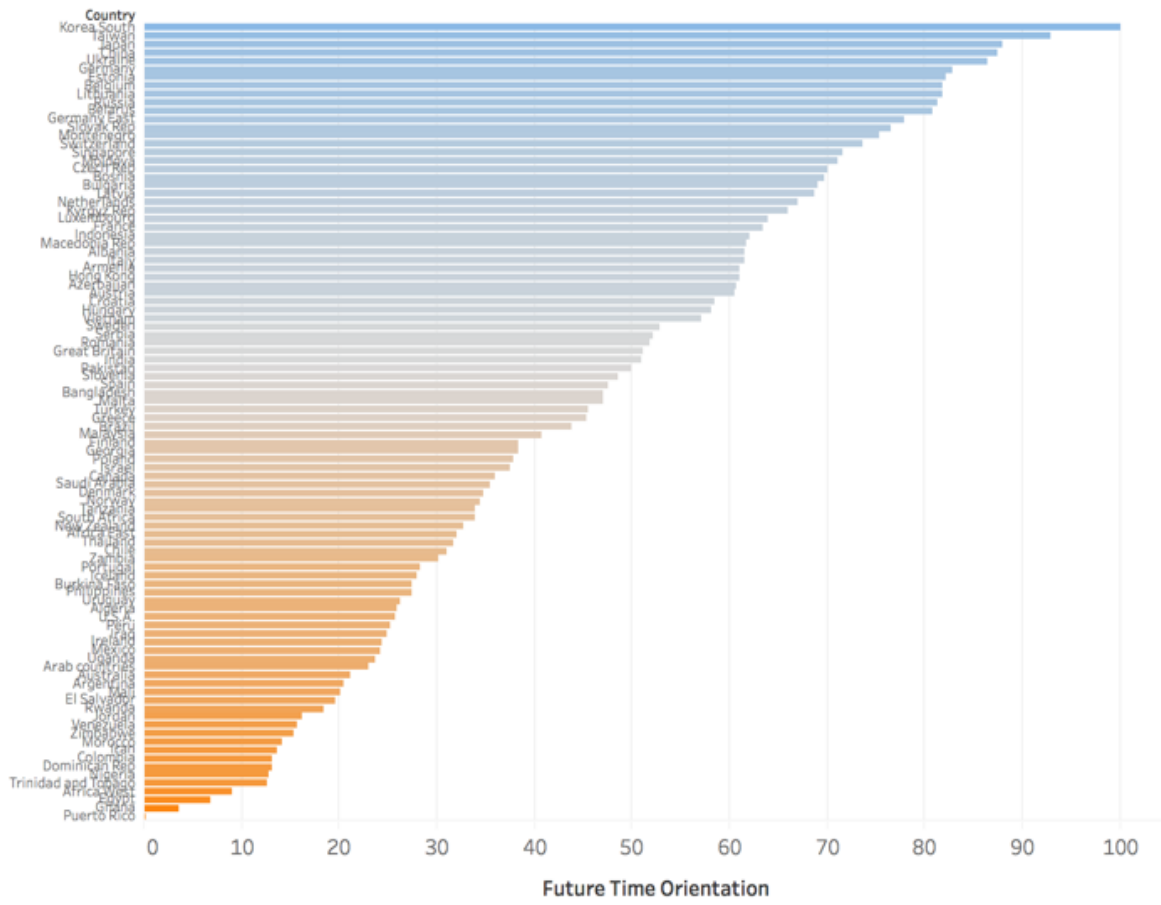
Two visualizations of national cultural time orientation scores. Created by the author; adapted from Hofstede & Minkov, 2010.

Table 2.8 Temporal Dimensions of Cultural Frameworks

Researcher(s)	Cultural Dimension	Scale		
Hall	**Time** Extent to which people approach one task at a time or multiple tasks simultaneously	**Monochronic** Sequential attention to individual goals; separation of work and personal life; precise concept of time (Germany, United States, Scandinavia)		**Polychronic** Simultaneous attention to multiple goals; integration of work and personal life; relative concept of time (France, Spain, Mexico, Brazil, Arab States)
Hofstede	**Long-term vs. Short-term Orientation** Outlook on work, life, and relationships	**Short-term Orientation** Past and present orientation; values traditions and social obligations (Pakistan, Nigeria, Philippines, Russia)		**Long-term Orientation** Future orientation; values dedication, hard work, and thrift (China, Korea, Japan, Brazil)
House et al.	**Future Orientation** Extent to which people engage in future-oriented behaviors such as planning, investing, and delayed gratification	**Low** Less emphasis on economic success; propensity for instant gratification; values extrinsic motivation; organizations tend to be bureaucratic and inflexible		**High** Greater emphasis on economic success; propensity to save for the future; values intrinsic motivation; organizations tend to be flexible and adaptive
Kluckhorn & Strodtbeck	**Relationship with time** Extent to which past, present, and future influence decisions	**Past** In making decisions, people are principally influenced by past events or traditions	**Present** In making decisions, people are principally influenced by present circumstances	**Future** In making decisions, people are principally influenced by future prospects
Trompenaars	**Time Perspective** Relative focus on the past or the future in daily activities	**Past/present oriented** Emphasis on past events and glory (Arab countries, France, Portugal, Spain)		**Future oriented** Emphasis on planning and future possibilities (China, Japan, Korea Sweden, United States)

Created by the author; adapted from Hall, 1959; Hofstede, 1980, 1993, 1994, 2001; House et al., 2004; Kluckhohn & Strodtbeck, 1961; and Trompenaars, 1993.

Table 2.9 Cultural Time Orientation Summary for Information Practice

	FUTURE	PAST/PRESENT
RELATIONSHIPS	Status	Independent of status
PERSONAL	Adaptability	Stability
FACE	Care, but it's a weakness	Save it
LEISURE	Meh	Go!!
MONEY	Save it	Spend it
REWARDS	Await me	Immediate
INVESTMENTS	Real Estate	Mutual Funds
BUSINESS SUCCESS	Market Position	Bottom Line
JUDGMENT	Contextual	Absolute

2.6.2 Cultural time orientation as research focus

As mentioned at the start of this chapter, despite calls for an holistic perspective on the information context and its potential influence on information evaluation or judgment, cultural time orientation is relatively unexamined with regard to information practice. In other fields such as cultural studies, decision science, and organizational behavior, however, cultural time orientation is thought to have significant implications for societal and business activities (Hall, 1959; Hofstede, 1980, 1994; House et al., 2004; Trompenaars, 1993, Schwartz, 1994). These analyses of cultural dimensions offer an inroad to examining cultural time orientation and information practice. People of different backgrounds will develop different hierarchical preferences (Prentice, 1980, pp. 58-59), which means that the way individuals assess the value of information is, at least in part, shaped by these preferences. Thus, the premise that cultural differences influence how people assign value to information implies that prioritization of information activities is shaped by different preferences, or value hierarchies, deriving from cultural background.

Variations in cultural time orientation have been explored in relation to several other aspects of life, such as human resources management, education, manufacturing strategy,

marketing strategy, politics, and other contexts in which people from different backgrounds interact. Given that there exist measures to evaluate cultural time orientation in such contexts, and that temporal factors have been shown to affect information prioritization, cultural time orientation should present a significant concern as well as opportunity to information studies scholars, as well as to researchers and practitioners in other fields.

A bevy of work-oriented behaviors has been associated with various cultural time orientations, and many of these have obvious ramifications for information practice. For example, investigations into innovation and creativity have noted the integral role of cultural time orientation as a confounding factor in the mismatch between managers' assumptions about how creative people work and the counterintuitive reality of the creative process (Persing, 1999, p. 359). In addition, some of the aspects of time orientation that people seem to "know" have not been addressed through empirical research with the aim of improving information practice. A common example is the tendency of cultures that function according to clock time to place a higher value on planning and punctuality than those operating on event time, and to evaluate employees according to efficiency and meeting deadlines, as opposed to assessing performance based on work type (Saunders et al., 2004, pp. 22-23).

To date, studies concerned with these variations in behavior have not addressed how people assess information value as they make decisions. An interesting study comparing news coverage of Latino collective action found through content analysis that the discrepancy in the extent of coverage between English- and Spanish-language newspapers is "primarily due to the different ways that the newspapers covered cultural events" (Okamoto et al., 2011, p. 221-231). This finding supports further investigation of the role of cultural time orientation with respect to prioritization of news coverage. The present research explores how cultural time orientation

affects the evaluation and prioritization of information in a context where timeliness and accuracy are critical to organizational success: the newsroom.

2.6.3 Culture in information studies

In information studies, most discussion of culture has to do with how archival records reflect the values of the culture in which they are created. Only rarely is culture discussed as a contextual component of information practice. Much of this omission may rest in the very foundational conceptualizations of information studies, exemplified by the conduit model of language transmission. Day explains that "controlling and idealizing linguistic and social normativity, and, relegating linguistic and social marginality and political contestation to minority or curiosity status, or simply, to being social or linguistic 'noise'" is a result of the circular use of the conduit metaphor (2000, p. 811). In other words, the classical positivist description of language as a means of message transmission and communication from sender to receiver retains a pragmatic conceptualization of information as entities that are intentional, self-evident, and quantitative in nature, unlike rhetorical devices employed to advocate for social, political, and cultural causes (Day, 2000, p. 811). There is no place for context in this paradigm.

In contrast, Ingwersen and Järvelin advocate the cognitive view that a system of categories or concepts mediates both perceptual and symbolic information processing. Thus, they pay particular attention to the role of context in information processing. In other words, an individual's understanding or interpretation of information derives from his or her unique socio-cultural background and experiences. As such, an individual possesses cognitive structures that are employed to interpret information at any given time. "[D]ifferent actors probably interpret a particular situation in ways somewhat different from one another, due to time gaps and the specific cognitive state and context associated with each actor" (Ingwersen & Järvelin, 2006, p.

27). When individual actors have a shared understanding of concepts and perceptions of work tasks, their social interaction generates collective cognitive structures. These collective cognitive structures affect how individuals perceive work tasks and also provide representations of various actors' information processing activities, e.g., in the form of information objects or database structures. In addition, collective cognitive structures evolve over time (Ingwersen, 1980, p. 158).

In Ingwersen and Järvelin's model, the degree of the perception of information need at a given point in time is set against the degree of variability (stable or variable) of intrinsic information need variables, given a perceived work task over time. This construct enables a non-linear, adaptive search strategy, as they describe, "[b]rowsing signifies an activity of randomness in searching. The searcher is open to novel paths and serendipity effects may occur" (Ingwersen, 1980, p. 167). The potential for novel search patterns is similar to Bates's Berrypicking model, which focuses on how the user adapts her strategy dynamically throughout the search process (Bates, 1989). While it is not as straightforward to assume that cultural time orientation influences the search sequence in the Berrypicking model, when viewed in combination with Ingwersen and Järvelin's cognitive view, the temporal implications are more pronounced.

The shared understanding that Ingwersen and Järvelin reference would be enhanced by taking into account cultural traits such as time orientation. Though Ingwersen and Järvelin assert "the time dimension" contributes to the ways in which humans classify phenomena according to situational and categorical classes and relations, it is unclear what the mechanism for this contribution is. They conclude that, "[u]ltimately, information retrieval in its real sense only takes place in the mind of the information seeker, that is, (acquiring) information is seen as the process of transforming a current cognitive state into a new state, as cognition, leading to

knowledge" (Ingwersen & Järvelin, 2006, p. 30). This may be taken to mean that the information seeker interprets encountered information based on his or her particular worldview, which stems from the current context, as well as his or her past socio-cultural experience. Given this understanding of the cognitive view, the time orientation associated with the individual's culture influences the meaning ascribed to the information, as well as the manner in which the seeker goes about acquiring it.

Another model of information practice that accounts for context is Saracevic's Model of Stratified Interaction. Developed within an overarching acquisition-cognition-application model of information use, this model comprises three levels: (1) surface, at which the user engages with the information system via commands or queries representing the problem to be solved, and responds to system queries designed to obtain more specific information about the problem; (2) cognition, at which the user interacts with and evaluates for utility the results provided by the system in response to surface-level queries; and (3) situation, representing the context within which the initial information problem arises and the results of the search may be applied. Very similar to Ingwersen's Cognitive Model of Interactive Information Retrieval, Saracevic's interactive model is based on the assumption that users interact with computer systems in order to take action with the retrieved information (Saracevic et al., 1988, p. 161) [well, by itself, this is pretty much a truism]. Saracevic et al. explain that the outlook for "information systems and searching processes (and by extension, of information science and artificial intelligence from where the systems and processes are emerging) lies not in increased sophistication of technology, but in increased understanding of human involvement with information" (Saracevic et al., 1988, p. 162).

Therefore, not only will including cultural time orientation as a factor that influences the information seeker's dynamic assessment and prioritization of information needs aid in the development and design of flexible information systems, but also it may provide for better resource allocation and improved understanding of the cognitive assessment of information value and prioritization. Investments in sophisticated technology may be improved through consideration and accommodation of cultural time orientation in an organization's information practices and systems. Knowledge about the users' cultural time orientations will assist designers in employing interactive dialogues and aiding techniques that steer clear of the rigid assumptions against which Bates admonishes (1989). In addition, an understanding of how cultural time orientation may affect individual and group decision making will decrease the likelihood of unexpected outcomes in the digital news environment.

2.6.3.1 Cultural dimensions as factors in information practice

Even though cultural time orientation has not been a focus of study in information studies, its power is far from trivial. Consider, for example, the contentious debate over the way that time has been expressed in formerly colonial nations. In 2014, Bolivian President Evo Morales drew attention to the power inherent in control over the representation of time when he ordered that the clock atop the Congress building in La Paz be redesigned. When opposition lawmaker Norma Pierola criticized this decision, she said the government "wishes to change the universal laws of time" (Associated Press, 2014). The hands of the clock now progress in what would be considered a counterclockwise manner in the United States, with the numeral three on the left and the nine on the right of the clock face. (See Figure 2.2.)

Figure 2.2 Clock Face as Anti-Colonial Symbol

The clock face on the Congress building in La Paz, Bolivia, represents time in a manner consistent with the movement of the sun in the Southern Hemisphere.

Bolivian Foreign Minister David Choquehuanca explained to the media that modern clocks derived from sundials; in the Northern Hemisphere, the passage of time is measured on a sundial such that the shadow moves to the right, while in the Southern Hemisphere, the opposite occurs. Marcelo Elio, the president of the nation's Congress, was more explicit, characterizing the purpose of the change as a "clear expression of the de-colonization of the people," and one of several symbolic anti-colonial acts implemented under Morales, Bolivia's first indigenous president (Richmond, 2014). This symbolic "correction" of temporal representation highlights the power wielded by those who control access to and representation of information. It is an act that casts doubt on the ability of current models of information practice to reflect how cultural concepts—in this case, time orientation—manifest in the everyday information activities of every member of society. Most important to this study, the clock atop the Bolivian Congress is an example of how the very foundations of our understanding of the world around us shape—and are shaped by—information practice.

Bolivia is not alone in its rejection of colonial temporal representation. In 2007, President Hugo Chavez turned Venezuela's clocks back by half an hour to secure a "more fair distribution of the sunrise" (Reuters, 2007). Venezuela is now the only country with a time zone four and a half hours behind Greenwich Mean Time (GMT). Similarly, in 2011, Samoa restored its time

zone to the west side of the international dateline, reversing an 1892 decision made to support trade with Europe and the United States. The move reflects Samoa's modern-day focus on trade with Australia, New Zealand, China, and Pacific Rim nations. A more recent reversal by North Korea in 2015 marked the 70th anniversary of independence from Japan. Since Japanese colonization in 1910, the entire Korean peninsula operated at nine hours ahead of GMT. By creating its own time zone, Pyongyang Time, North Korea now runs eight and a half hours ahead of GMT. Notably, trade relations are cited frequently as reasons for making changes to a nation's time zone; it is possible that temporal information practices take on greater by virtue of their symbolic representation of freedom from colonial rule.

As has been discussed, in other fields such as cultural studies and organizational behavior, cultural time orientation is thought to have significant implications for societal and business activities (Hall, 1959; Hofstede, 1980, 1994; House et al., 2004; Schwartz, 1992; Trompenaars, 1993). These analyses of cultural dimensions offer an opportunity to explore causal links between cultural time orientation and information practice. Similarly, we can also learn from research on culture in relation to several other fields of practice, such as education, human resources management, manufacturing strategy, marketing strategy, politics, and other contexts in which people from different backgrounds interact (e.g., Briley & Aaker, 2006; Louis, 1980; Leong, 1989; Bruner, 1996; Suárez-Orozco & Qin-Hilliard, 2005).

2.6.3.2 Cultural time orientation in the workplace

The instrumental nature of time in information practice makes it likely that (1) time orientation also affects information practice in the work environment, and (2) it would be useful to understand how time orientation manifests in organizational information practice. In brief, the temporal factors within the information context must be understood better in order to identify

best practices and resource allocations that will optimize the outcomes of individual and group information practice in the workplace. My analysis of 36 models of information practice indicates that some characteristics, such as accommodating an evolving search and leveraging opportunities for serendipitous information acquisition, tend to be more sensitive to culturally derived contextual factors. Since there have been few—if any—empirical studies investigating how such characteristics affect decision making, prioritization, and, ultimately, action, this exploratory analysis is designed to inform further research on the effects of time orientation on information practice by drawing insights from researchers in other disciplines who have established that there are significant advantages to incorporating time orientation in the management of activity. For example, in fields such as cultural studies and organizational behavior, time orientation is described as a cultural trait with significant implications for societal and business activities (Hall, 1959; Hofstede, 1980, 1994; House et al., 2004; Schwartz, 1992; Trompenaars, 1993). These analyses of time orientation in other disciplines offer an inroad to identifying differences in time orientation, as well as what measures may reveal causal links between time orientation and various aspects of information practice.

On this basis, including cultural time orientation under the umbrella of context in models of information practice is helpful to discern the factors that influence how individuals and groups engage with information. In other words, just as studies of information-seeking user groups have identified individual traits that can help predict user information activity, there may be aspects of individual information practice in organizations that derive from cultural time orientation and may be generalizable.

2.6.3.3 Cultural time orientation and digital media

Researchers in science and technology studies (STS) have explored the mutual influence of technological innovation and information practice, finding that culture and technology co-

create one another (e.g., Daston & Galison, 2007; Sterne, 2012). A significant body of research examines the relationship between "born digital" generations and notions of community, identity, work, commerce, among other aspects of daily life. This stream of research is outside the scope of the present study, but noted here because of a nagging suspicion that shifting notions of materiality and value may not be reflected in existing models of cultural time orientation. For example, Millennials are said to place a high value on experience, and their digital documentation of experience is manifest in the "selfie" culture associated with this and younger demographic groups. The disconnect between a seemingly endless capacity for digital media creation, sharing, and storage and the real environmental and economic costs of building, maintaining, and providing access to cloud-based storage may reflect a short-termism that is not considered in the models of culture described in this chapter.

2.7 Time Analytic Framework for Information Practice

My later analysis of the Twitter networks of each news organization is informed by theories and research findings from several fields of study. Using a novel combination of research methods, I conducted an exploratory, empirical network analysis of the three news organizations' Twitter streams, both before and after each company implemented software to automate prioritization and dissemination of news items via social media. The three-step study of the news organizations' Twitter networks was used to identify several critical incidents before and after the transition to algorithmic news distribution via Twitter. Borrowing from aspects of the critical incident technique, I first conducted a social network analysis of the people engaging in online conversation referencing each news entity to explore how each organization prioritized and shared relevant information with its respective audience and to identify potential critical incidents for study.

Next, I conducted an informetric network analysis to disentangle potential critical incident tweets (CITs) that might reflect cultural time orientation from the social ties among individuals. I examined the paths that these CITs traveled through the social networks, looking for structural indications of cultural time orientation. Finally, I used the Time Analytic Framework for Information Practice (TAFIP) (tâ′• fĭp) to conceptualize the role that cultural time orientation may have played in the different patterns of information practice observed across the news organizations. This methodology is delineated in Chapter 3.

The analysis of existing models of information practice led to the development of the Time Analytic Framework for Information Practice (TAFIP), represented in Figure 2.3.

Figure 2.3 Time Analytic Framework for Information Practice

The objective of the TAFIP is to provide insight into the influence of cultural elements like time orientation on the conscious and unconscious decision rules that guide individuals' interpretation and valuation of information, which manifest in information engagement. A better understanding of the factors that influence these decision rules should help people reduce the incidence of unanticipated information prioritization. In other words, knowing how cultural time orientation

Interpretation

Evaluation

Context

Attention

Action

Expectations
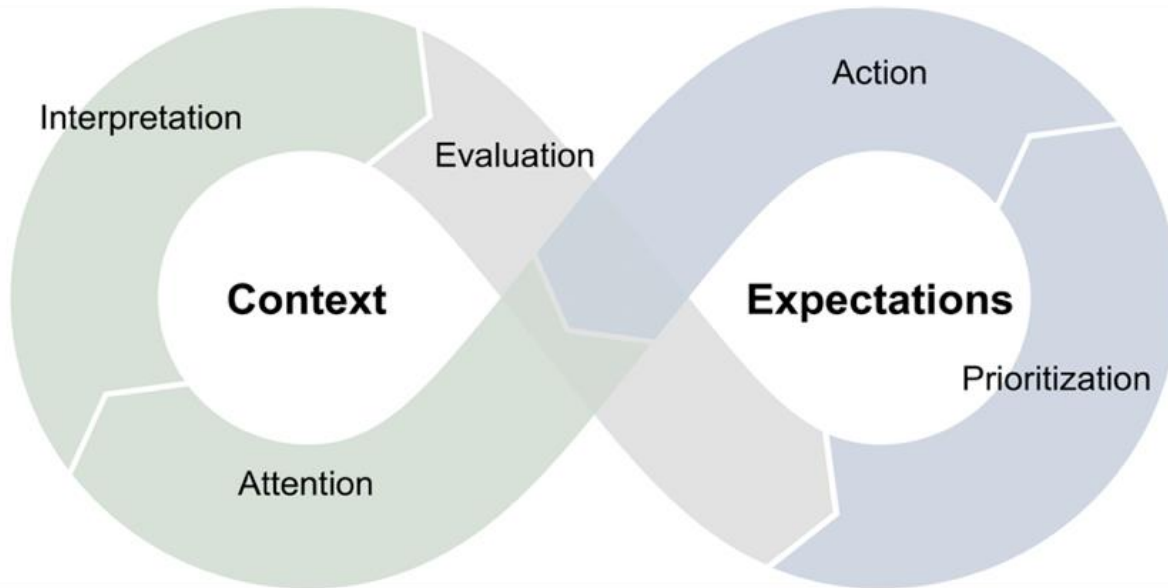
Prioritization

may affect individuals' expectations for information prioritization can help systems designers, managers, and other stakeholders limit negative surprises and promote positive surprises.

Following my preceding analysis of the three dozen models of information practice, I integrated aspects of these models into the TAFIP. Cultural time orientation and other elements of context influence each stage of information practice. Information users are engaged in all of the stages of the TAFIP simultaneously. One may think about contextual forces as the underlying background, experiences, environment, and other predispositions that influence how people make decisions in each TAFIP phase, as shown in Figure 2.4.

Figure 2.4 Contextual Influences Underlying the TAFIP
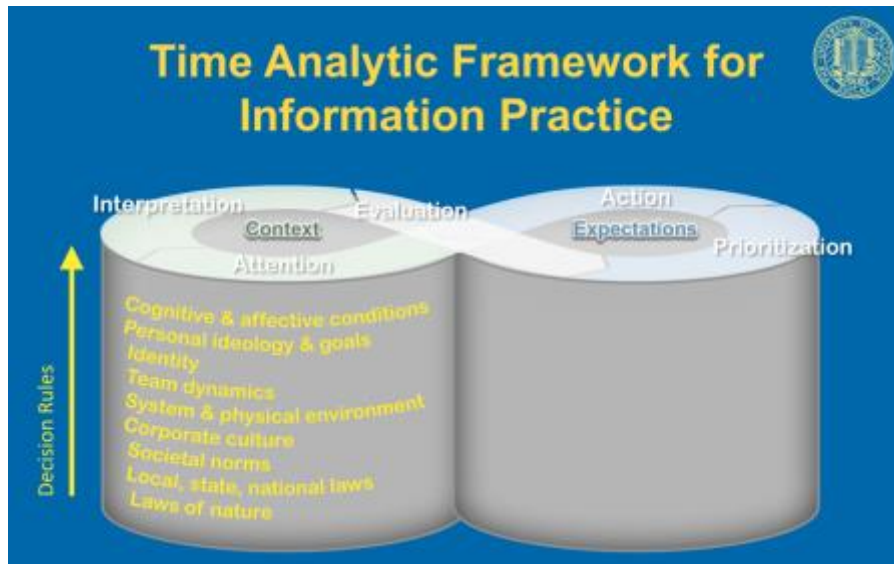
Contextual forces shape the decision rules governing each phase of the TAFIP.

2.7.1 Attention

Before it can be recognized as a viable information item for distribution through a news organization, a news item must first catch the social media manager's attention. To follow the path of an information item through the framework, we begin with a look at how it captures the attention of the organizational user tasked with prioritizing all relevant information. In the context of news organizations, this user is typically an assignment editor, beat reporter, or social media manager. Before social media, news items usually came to the attention of assignment editors in three ways: the tip, the press release, and the beat reporter. Beat journalists develop domain-specific knowledge in the process of writing about one area of interest, and usually develop an extensive social network among academics, practitioners, and citizens concerned with that news topic. Further, beat reporters often become expert commentators on issues in their respective domains. For example, as a beat reporter for the *Baltimore Afro American* in 1961, Moses Newson covered the first wave of Freedom Riders in Rock Hill, South Carolina, where he witnessed the beating of future congressman John Lewis at the hands of a mob of white men

(Perrusquia, 2017). Newson covered several civil rights events in the 1950s and 1960s; his expertise has been sought by reporters today who are covering the Twitter dispute between Donald Trump and John Lewis in 2017.

Assignment editors play a key role in recognizing newsworthy information, as well, through the receipt and assignment of news items promoted by press releases and tips. In addition, editorial staff frequently canvas their reporters to direct coverage of news events that meet the mandates of the organization's mission and financial obligations.

In the digital era, Twitter and other social media networks have become central to the information monitoring practices in news organizations, as an extension of the traditional tip and press release formats. Trending topics identified by hashtags (semantic indicators of issue themes formed with an initial #) on Twitter provide insight as to issues that are attracting attention on global, national, and local scales. Culturally, it is conceivable that people are conditioned to recognize some phenomena more easily than others. However, it would be difficult to differentiate the influence of culture on news awareness from the influence of a local news focus, as the two domains overlap considerably. Therefore, it would be unlikely that one would be able for a researcher to differentiate cultural time orientation from other influences during the journalist's Attention phase of the TAFIP.

2.7.2 Interpretation

Sperber and Wilson's Relevance Theory powers the Interpretation phase of the TAFIP. Considerations such as language, timing, source, medium, and framing help the researcher contemplate how an information item may be interpreted in context. Textbook examples of a failure to think about how a message may be interpreted by recipients with varied cultural backgrounds abound; my favorite is a fable about the Chevy Nova. The story, often taught in

marketing classes, describes how Chevrolet's marketing department failed to anticipate how naming the car Nova, which means *won't go* in Spanish, might provoke a negative reaction among car buyers in Latin America. While the lesson is a prescient warning, the story is fabricated.

Unfortunately, many of the anecdotes used to explain cultural differences in interpretation focus solely on language translation. The TAFIP provides a much richer base of cultural attributes to consider when analyzing how the temporal aspects of information practice affect users' interpretations of meaning. Once meaning is ascribed to information, the constraints and affordances of that meaning influence the evaluation of the information item in terms of its usefulness.

2.7.2 Evaluation

The Evaluation stage in the TAFIP represents the information practice by which news items are assessed for their value to the newspaper's readership and to the news organization. The dynamic nature of news manifests in the Evaluation stage, as all of the news items competing for attention and coverage must be considered by the actor responsible for prioritizing news for distribution, whether human and/or algorithm. The news values detailed in Chapter 3 serve as the primary evaluative framework for information received by news organizations through tips, press releases, and other channels.

As news items are evaluated, they are assigned an information value. Relative weighting of news items may be influenced by conscious and unconscious means when evaluation is conducted by human judgment; in an automated scenario, the weighting must be determined beforehand and is applied consistently to each news item according to the algorithm used. Often, items are ranked in a simple list; other times, more complex planning occurs, during which

potential social media engagement is calculated based on the perceived performance of similar tweets in the news organizations' network (whether perceived by humans or assessed by algorithm). In addition, news organizations may use in-house and/or third-party data analytics to inform the relative information value assigned to each news item based on historical performance of similar tweets.

2.7.3 Prioritization

During the Prioritization stage, the weighted information values are compared and actions are scheduled for Twitter engagement. It may be determined that a news item has a high information value and that the news organization's readership appreciates being among the first to learn about an emerging issue. In this scenario, a tweet may be composed immediately for distribution. Alternatively, a news item may garner a low information value and be held in queue for use during a slow period, to support a particular corporate initiative scheduled at a time in the future, or for some other use.

Of course, information utility depends on several factors. In the TAFIP, one is concerned with how the perceived usefulness of the information shapes the prioritization of information items for distribution. When a user determines the priority for a particular information item, possible actions include disregarding, storing (intentionally or unintentionally), and scheduling, among other types of action. Regardless of this prioritization, the information item, once evaluated, is no longer the focus of the user's (journalist or algorithm) attention. Whatever information item is salient—either simultaneously in a polychronic culture, or sequentially next in a monochronic culture—becomes the object of interpretation by the user, subject to contextual forces, including the user's cultural background, the organizational mandates directing the user, and the culturally informed expectations of the readership, as described previously.

2.7.4 Action

Posting to Twitter occurs in the Action stage of the TAFIP. Depending on the context and expectations of the intended readership, the tweet may contain hashtags, hyperlinks, images, and/or video clips, along with brief text (a total of 140 characters). Also in the Action stage, news organizations respond to feedback from individuals and groups on Twitter; this may be accomplished through human message exchange and/or through the use of automated software.

2.7.5 Context and expectations

As described previously, a communication's inherent intended meaning is either validated by the recipient in shared understanding, or interpreted differently, representing a violation of the expectations of both the sender and the recipient. Context, of course, shapes our expectations for what others will do, say, and think. Thus, context and expectations are intrinsic elements of the TAFIP, in which each stage of the framework is situated. In Chapter 3, the research design elaborates on how context and expectations are operationalized in this study.

While each stage of the TAFIP is instrumental, this study focuses on the Prioritization stage, because it is inherently temporal. Since cultural time orientation influences how one makes sense of and assigns value to information, it may also affect information Prioritization and Action. In business, any unanticipated deviation from expected prioritization of tasks can have dramatic effects. For example, in an organization with a reputation for customer service, an employee's decision to conduct a supply chain analysis before responding to a consumer inquiry may be surprising; the cultural norms place a greater value on customer service than on supply chain management, so the employee's prioritization violates internal and external expectations. However, the same prioritization in an organization known for its low carbon footprint likely

would be expected and rewarded. Thus, surprises in organizational information practice are generally avoided, though they may also be opportunities for creative innovation.

In news organizations, speed is valued highly, yet "finding and conveying the truth means placing events *in perspective*—that is, showing them in the context of the other events that give them meaning" (Gardner et al., 2001, p. 141, emphasis in original). It is more likely that different cultural time orientations would produce tweet prioritization patterns that vary from one news organization to another during the Prioritization phase than in another stage of the TAFIP. If such patterns can be detected, then news organizations can incorporate culturally influenced decision rules into the prioritization of information, perhaps mitigating some of the tension between competing expectations of instantaneity and the need for context.

Social media managers (and the software programs used in their stead) are tasked with the identification, interpretation, evaluation, prioritization, and dissemination of news items via networks like Twitter. Although "[k]nowledge about the time span a person considers when making decisions is important in predicting how he or she will act, that is, what goals will be pursued" (Seijts, 1998, p. 154), this rarely is considered when devising information practices in the workplace. Cultural time orientation can contribute to this knowledge, yet it is disregarded— at least an any explicit sense—from the information practices at the three news organizations under study (as will be discussed below), as well as from existing models of information practice. The TAFIP provides a means for incorporating cultural time orientation into information practices, both those relying on human judgment and those using algorithmic solutions.

Chapter 3: Methodology

The TAFIP-guided study of Twitter information practices at three culturally distinct news organizations aims to answer these research questions:

> RQ1.　To what extent do human and algorithmic news prioritization reflect the temporal values and beliefs of culturally distinct news organizations?
>
> RQ2.　How has the shift from human to algorithmic prioritization of news items for distribution via Twitter affected news organizations' social media activity?

This study examines the social media networks of three news organizations before and after implementing automated solutions for the distribution of news items on Twitter. Combining aspects of the critical incident technique and social network analysis makes it possible to explore the structure and attributes of persistent information items in each network. The TAFIP organizes this exploration to aid in the identification of contextual influences on the news organizations' prioritization of these news items, as well as on the expectations of the readership. The first part of this chapter describes my methodological approach and the study's three-step research design. The remainder of the chapter reviews some of the more technical aspects of the research, including a description of the Twitter social media platform and an overview of the software solutions in use by *The Korea Times, La Opinión,* and *The Los Angeles Times*.

3.1 Research Design

The purpose of this mixed-methods, exploratory study is to examine the role of cultural time orientation in the prioritization of news items shared via Twitter by social media managers at news organizations and by the algorithms deployed to replace these employees. Using a combination of social, informetric, and interpretive network analysis methods, I explored the role of cultural time orientation in the information practice of news organizations' social media

managers and software solutions.

The study was conducted in three phases, using social network analysis, informetric network analysis, and interpretive analysis. The output of each phase served as the input for the next, for each of the three news organizations. This section describes the theoretical basis of the methodological approaches used in the exploration of cultural time orientation in the context of journalism's algorithmic turn.

Exploratory research is characterized by a primary objective to determine "the boundaries of the environment in which the problems, opportunities or situations of interest are likely to reside, and to identify the salient factors or variables that might be found there and be of relevance to the research" (Creswell, p. 53). In the context of social media news production, the boundaries of the environment were extended beyond the perimeter of the newsroom and the Twitter platform to include the economic, political, and cultural spheres in which news media function, as components of the information context.

To assign meaning to patterns observed in the information context, I also employed an interpretivist approach. Interpretivist research endeavors to understand a particular phenomenon and gain deep insight into the context that shapes it. Accordingly, the interpretations of social media network activity are informed by in-depth research on the economic, political, and social forces defining the culture of each news organization's readership. Researchers employing an interpretivist perspective strive to immerse themselves in the context of the phenomenon under study to add richness and depth to the data collected. Oriented toward discovery and process, this inductive, qualitative methodology is concerned with high validity and deep understanding of phenomena in context.

The research design mitigates Mustafa Emirbayer and Jeff Goodwin's (1994) criticism

that "despite its powerful conceptualization of social structure, network analysis as it has been developed to date has inadequately theorized the causal role of ideals, beliefs, and values, and of the actors that strive to realize them; as a result, it has neglected the cultural and symbolic moment in the very determination of social action," through the incorporation of Lasswell's media framework. To identify agency and motivation throughout the creation and transmission of tweets, Lasswell's framework provides three functions to keep in mind:

1. Surveillance of the environment (news coverage)
2. Correlation of the parts of society (interpretation of news items)
3. Transmission of culture (history, values, religion, language).

While Lasswell's media framework is useful for thinking about the motivations and intentions of media messages, the TAFIP offers a model for the study of information practice, agnostic of the meaning, purpose, or intent of the content. The model may be used to assess existing information practices at the organizational, group, and individual levels, as well as in the development of new information practices and algorithms. To briefly—and in very simplified fashion—distinguish between information studies and journalism, the former focuses on the structure, systems, and technologies of communicated information, while the latter is concerned with the meaning or truth of the content [well, not only; you have style, professional norms, media markets and economics, audiences, etc.]. Therefore, the TAFIP is a guide to analyze information practice—the ways in which humans create, circulate, seek, retrieve, encounter, manage, destroy, store, maintain, share, and otherwise engage with information—by focusing on components of the information context that affect how humans and algorithms assign value to and prioritize information.

Since my exploration concerns the connections among tweets, I took an informetric

approach to methods commonly used in research on social media networks, identifying several

critical incidents before and after the news organizations transitioned to algorithmic news

distribution via Twitter. Next, I conducted an in-depth analysis of the paths that these critical-

incident tweets (hereafter, CITs) traveled through the networks to explore how each organization

prioritized and shared relevant information with its respective audience. For each critical

incident, semantic indicators of urgency, sentiment, and virality were assessed, with the aim of

detecting patterns that may be interpreted as having different meanings across the three news

organizations. Figure 3.1 presents an overview of this research methodology.

Figure 3.1 Research Method Overview
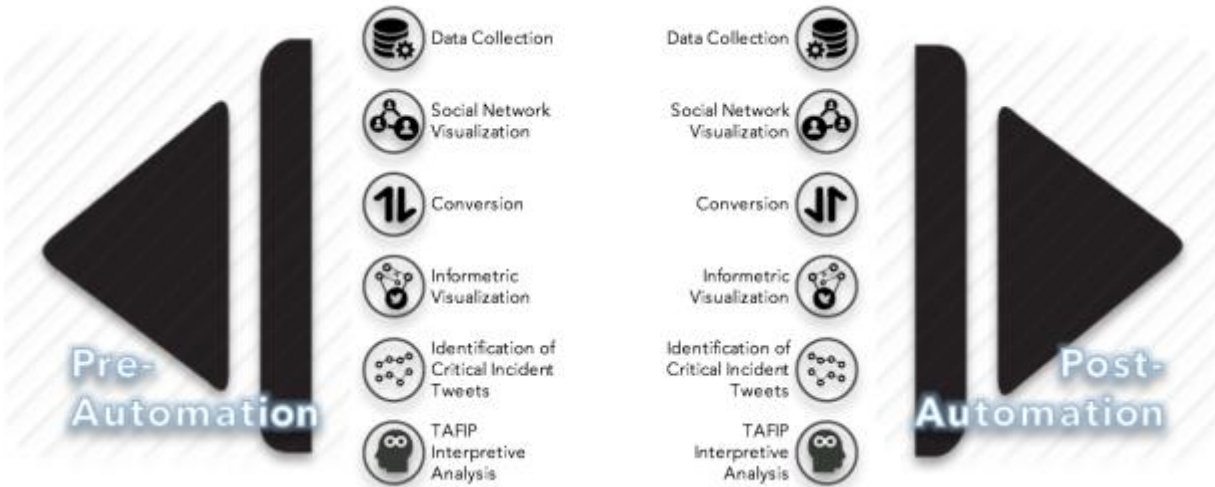
Six steps of the research method.

House et al. (2004, p. 20) argued that "the attributes and entities that distinguish a given

culture from other cultures are predictive of the practices of organizations and leader attributes

and behaviors that are most frequently enacted, acceptable, and effective in that culture." The

theoretical foundations of the present study are employed to assert a similar relationship between

cultural time orientation and information practice. Thus, as Figure 3.2 illustrates, the research

design rests on four premises: culture forms the basis of individual preferences, cultural time

orientation influences interpretation of meaning and assessment of information value in context,

prioritization results from continuous information evaluation and decisions for action, and consistent prioritization over time establishes expectations for information practice.

Figure 3.2 Research Premises

Consistent prioritization over time establishes expectations for information practice.

Prioritization results from continuous information evaluation and decisions for action.

Cultural Time Orientation influences interpretation of meaning and assessment of information value in context.

Culture forms the basis of individual preferences.
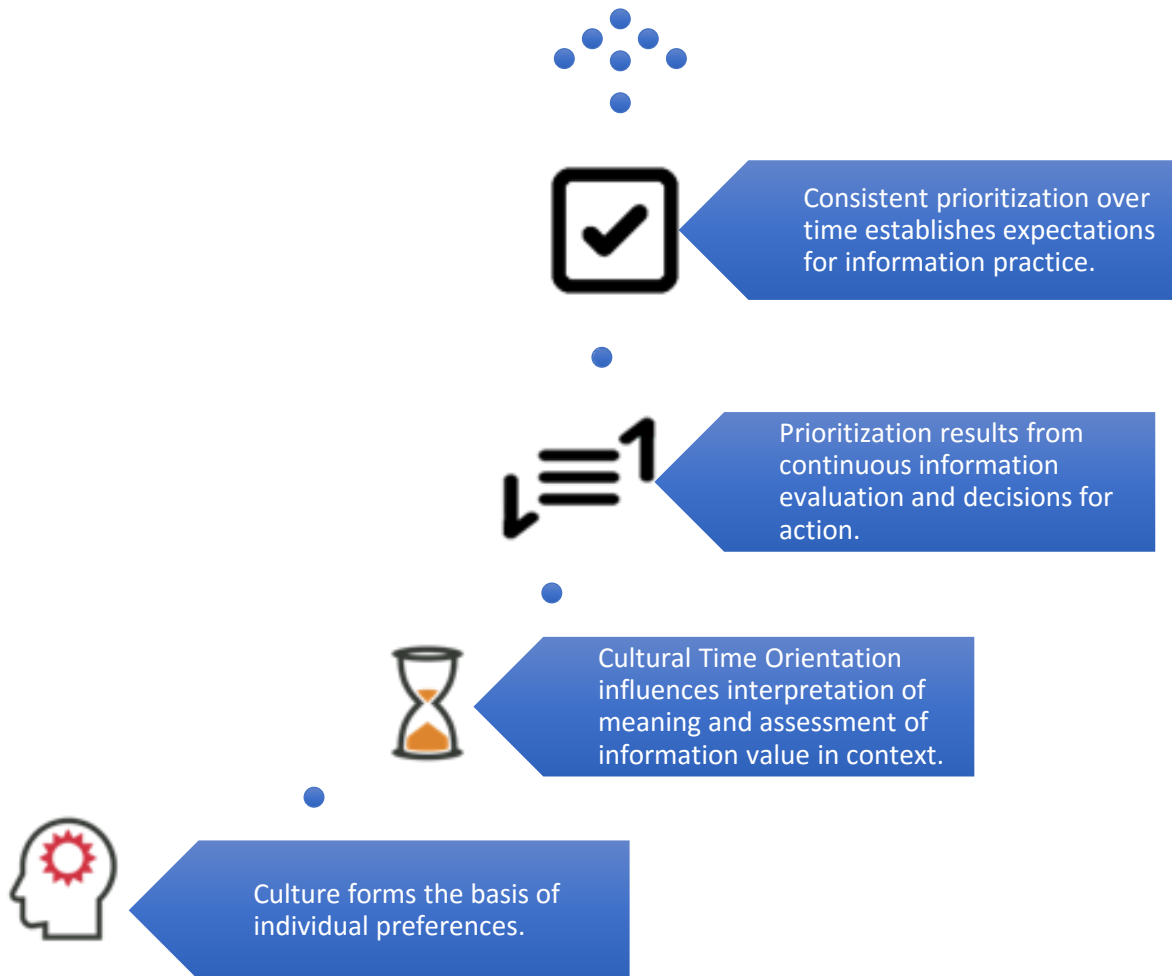
The research study is based on four premises.

3.2 Suitability

Three characteristics of these news organizations suggest their suitability as objects of study: the inherent time sensitivity of journalism, the organizations' close identification with their target audiences, and their tendency to prioritize coverage according to the values associated with those audiences. Moreover, the social media activity of such news organizations is a rich potential data source, because it, too, is intensely time-sensitive, and can be thought of

as a nearly real-time representation of how the news organizations perceive the interests of their respective audiences. This study explores how news professionals and the software used to replace them engage with information during news prioritization in the social media context, a platform that demands more rapid distribution than traditional media and is populated by an almost inconceivable number of information items competing for readers' attention.

3.3 Social Media News Production as a Site of Information Practice

This section begins with an overview of various technological considerations pertaining to the research study and a description of changing business models in journalism to provide context for the "algorithmic turn" in news organizations' social media information practice. Following a brief update on circulation and employment in the industry in general, I then describe each news organization's mission, organizational structure, and readership, with a focus on news values—both explicit and implicit—that influence their prioritization of news items for distribution via Twitter. Included in these descriptions are accounts of routine practices relevant to social media distribution. This summary, derived from my examination of the academic and business literature, as well as discussions with industry experts, provides background for the study of the Twitter streams of three culturally distinct, Los Angeles-based news organizations.

Following a description of the Twitter microblogging platform and its use as a news resource, I report on insights about the algorithms used by each news organization gleaned from an analysis of the programming code underlying news items disseminated by each news organization.

Finally, this section concludes with a brief description of the technology used to collect, analyze, and render visualizations of the Twitter networks of each news organization.

3.3.1 Twitter as a news platform

Twitter is a social media platform designed "[t]o give everyone the power to create and share ideas and information instantly, without barriers" (Twitter, 2016). Establishing an account and selecting a username, called a handle and notated with an @-symbol prefix, gives a Twitter user access to information exchange and conversation among 317 million people and organizations worldwide (Twitter, 2016). These activities occur through 140-character tweets, which can include text, hyperlinks, images, video, audio, and symbols. The social aspect of the platform is accomplished through connections initiated by following and being followed by other users. Following a user adds that user's tweets to the dynamic stream of content that appears on one's home screen, called the feed. Users may select from a number of privacy configurations, controlling the audience for their tweets. In addition to "direct message" communication, users employ a variety of semantic conventions to communicate, including hashtags, emoticons, and recommender signals.

Hashtags are words or phrases by which users classify their tweets. Prefixing a term with the hash (#) symbol is a means of communicating a few different things. Most often, a hashtag is used to contribute a tweet to the evolving conversation about an issue which has already been labeled with that hashtag. For example, the Twitter dispute between then-President-elect Trump and Congressman John Lewis mentioned in Chapter 2 is chronicled on Twitter under the hashtag #StandWithJohnLewis. All tweets containing a particular hashtag can be viewed together to follow a topic (see Figure 3.3).

Figure 3.3 #StandWithJohnLewis Twitter Feed

Manooshka @ManooshDesign · Feb 10
That was his plan tramps are leaches of the society #TheResistance
#PutinPuppets #StandWithJohnLewis #PenceTrumpTREASON 🎈🎈🎈🙏🙏
🙏

MSNBC ✅ @MSNBC
Rep. Elijah Cummings: "The president will benefit from all
of these entanglements that he's still involved in."

1:08

↩   ↻ 3   ≋   ♥ 5   ↺

ResistLoud @resistloud · Feb 10
Still #standwithjohnlewis #IllegitimatePresidency #PutinsPuppet doesn't belong
in the WH. #Traitor #Treason #LockHimUp

n.owl @upforhill
Your daily reminder, Russia attacked the U.S., highjacked our election and
the person occupying the White House was installed by Putin.

↩   ↻ 1   ≋   ♥ 2   ↺

👤 Barack Obama follows
Jermika Da Jeweler 💎 @JmeEkZ · Jan 30
EVERYDAY THERES A NEW TARGET YOU MAY NOT BE ABLE TO RELATE TO
OPPRESSION OR THE OPPRESSED BUT YOU MIGHT ITS ONLY MONDAY
#StandWithJohnLewis

Each time a man stands up for an
ideal or acts to improve the lot of
others or strikes out against

All of the tweets containing the #StandWithJohnLewis appear together, providing a timeline of contributions to the conversation on Twitter. Created by the author. Source: Twitter.

Trending topics identified by hashtags on Twitter provide insight on issues that are attracting attention on the global, national, and local scales. However, hashtags also are used frequently to communicate irony and/or humor, which can be a challenge in text communication. For example, @SarahPhilo357 uses the hashtag #FirstWorldProblem to intimate that her tweet, which describes how quickly one may consume a large amount of food, refers to a problem that only privileged citizens of developed nations may face (see Figure 3.4). The hashtag often is used in a self-deprecating manner—sheepishly lamenting a difficulty or frustration that, when assessed on a greater scale, actually conveys privilege—because that deprecation may make the post more socially acceptable.

Figure 3.4 Humorous Hashtag Use on Twitter

Sarah Philo @SarahPhilo357 · 10h
do you ever look at food and think "wow that's a lot of food" and
then 10 mins later you're like "wow I just ate a lot"
#FirstWorldProblem
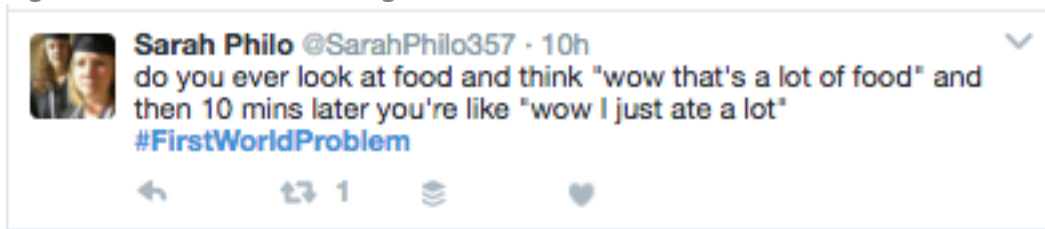
Source: Twitter.

Another way Twitter users convey sentiment is through the use of emoticons. These symbols are intended to provide a shorthand for expressing feeling, as well as for indicating aspects of identity. For example, hearts and smiley faces are taken to mean love and happiness, respectively. Beyond simple feeling symbols, there are hundreds of emoticons designed to represent a host of meanings, including identification with ethnicities, nationalities, genders, and political movements. For example, Melinda Gates used an emoticon that combines a heart shape with the astrological Venus symbol for woman in a tweet to express her solidarity with the women's movement (see Figure 3.5).

Figure 3.5 Emoticon Used To Convey Solidarity

Melinda Gates
@melindagates

We're all greater when everyone is equal. Today, millions are standing together in support of this vision. #WomensMarch ♀

Source: Twitter.

In addition to text-based symbols, Twitter users may post images to their profile pages— one large banner image and one avatar, most often a thumbnail picture of oneself. Since these images can be changed easily, people frequently select images to convey sentiment and to mark special occasions. For example, many Twitter users replaced their avatars with a black screen to

protest the loss of rights they expect from the Trump administration.

Twitter users also communicate solidarity, agreement, and/or support by clicking on the heart symbol (♥) that appears below each tweet. These endorsements can be viewed on a user's profile page under the "Likes" tab. Users can learn about the types of information with which others identify by viewing this archive of endorsements.

In addition, users may respond to a tweet by posting a public reply or sending a private direct message to the tweet's author. Users also can signal their agreement or disagreement with a tweet by "retweeting" it. Retweeting is the primary mechanism for information diffusion through the Twitter network. Retweeting re-broadcasts a tweet to a user's followers. Users can retweet instantly by clicking on the retweet symbol (⟲) beneath a tweet and clicking a confirmation approval—two mouse clicks. Alternatively, users may include additional information as a preface to an item. This activity is called a quoting retweet; the user's retweet contains the quoted tweet in addition to new text.

Twitter is one of the most widely used social media platforms among American organizations. Eighty-six percent of the companies on the Fortune 500$^©$ list of America's largest corporations have active Twitter accounts (see Figure 3.6), indicating that these organizations see merit—and revenue—in engaging with the public through this platform.

Figure 3.6 Percentage of American Adults and Fortune 500©
Companies with Active Accounts on Social Media Platforms, 2012-2016
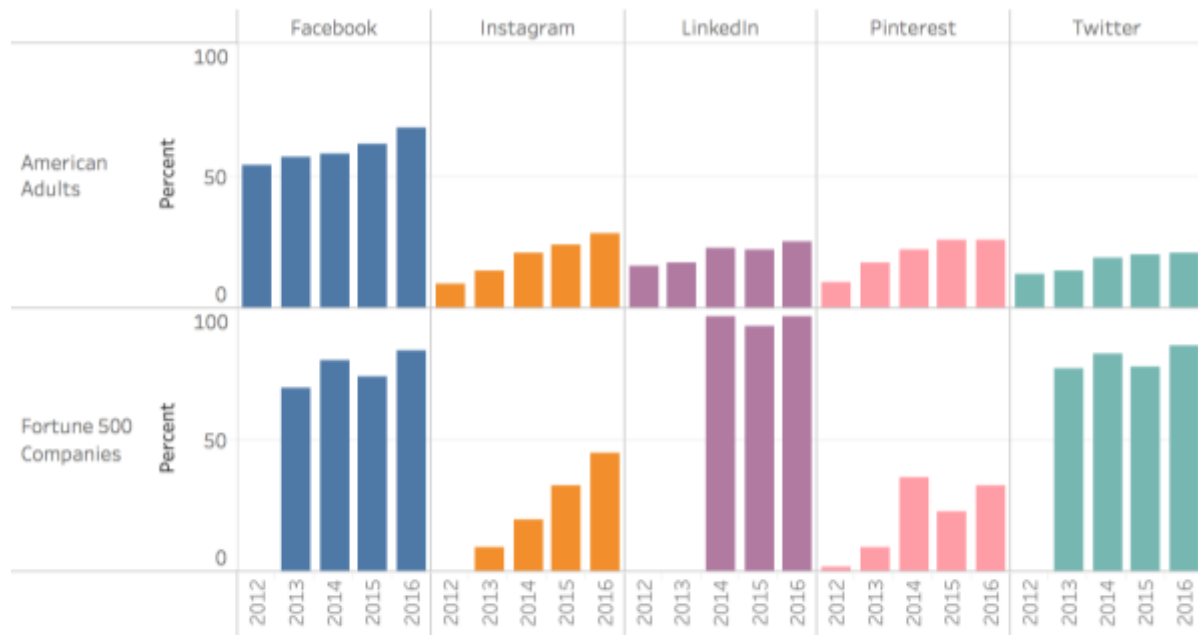
Created by the author. Compiled from annual data reported by the University of Massachusetts Dartmouth and Pew Research Center.

As mentioned in Chapter 2, American voters increasingly turn to social media networks as primary sources of political information, and Twitter is a platform designed expressly for the timely exchange of relevant content. Twitter consistently outperforms other platforms in presidential election news coverage. Similarly, the Millennial population (the generation born between 1981 and 1998) is now the largest generational cohort in the United States and looks to Twitter for information about trending topics and news (see Figure 3.7). While this cohort also gets news from Facebook, over time the two platforms have diverged such that Twitter is better known for news and Facebook for more personal and relationship-oriented content. Finally, American Twitter users cite being alerted to breaking news and keeping up with news as the reasons they most often turn to Twitter (see Figure 3.8).

Figure 3.7 Why Millennials Use Facebook and Twitter

	Facebook	Twitter
To see what's trending and what people are talking about on social media	34%	43%
To find things that entertain me, such as funny lists, articles or videos	58%	41%
To see what's happening in my friends' lives and what they're talking about	76%	35%
To get more information on something I heard either on social media or in the news	33%	32%
To look for interesting articles or links my friends or organizations I follow have posted	46%	32%
To tell people what's going on in my life or to share content	42%	32%
Other	3%	5%

Created by the author. Compiled from data from the National Opinion Research Center, the American Press Institute, and the Media Insight Project, January-February, 2015.

Figure 3.8 Why Americans Use Twitter
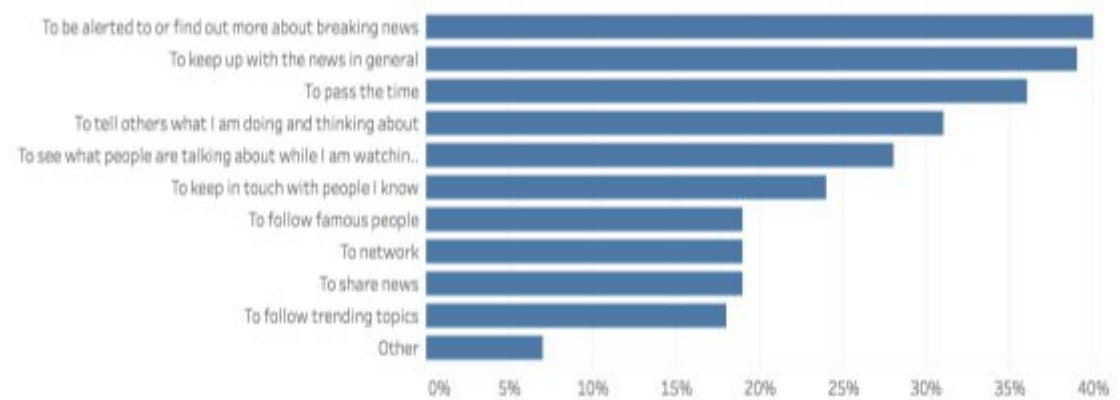
Created by the author. Source: American Press Institute, 2015.

There are several third-party software solutions to help users manage and automate their engagement on Twitter. Programs such as Buffer, HootSuite, and TweetDeck provide simple

network analytics, monitoring, and scheduling capabilities. In addition, there exist thousands of software extensions that users can configure to automate activity on Twitter. Code bridges such as Zapier and IFTTT facilitate cross-platform automation, which helps users engage in multiple social media networks at once. For example, a Twitter user may use an extension to post tweets to Facebook automatically or to add a line to an Excel spreadsheet to keep a record of every tweet containing a particular hashtag.

All tweets that are not protected by user privacy settings or deleted by their authors or administrators can be discovered through Twitter's public search feature. In addition, many third-party software applications provide access to the Twitter "firehose" archive. These services tend to be expensive. To access tweets that have been deleted by their authors, one can try the Internet Archive and/or a number of other archiving services, such as BackTweets and Politwoops.

Twitter's free public API has many limits, which impose constraints on the feasibility and scope of social media research. For example, data is available for up to nine days, making it difficult to study patterns retroactively. Further, API queries return up to 18,000 tweets at a time, which, for entities that are highly active on Twitter, is a drop in the bucket. For example, as my manual collection of tweet counts for each entity studied over time indicates in Figure 3.9, 18,000 tweets represent a mere 18.7% of the running count of tweets posted by the *Los Angeles Times* using the @latimes Twitter handle in 2015.

Figure 3.9 Running Tweet Count

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
■ latimes	1	335	13,514	18,583	35,505	50,395	76,902	96,100	130,000	157,000
■ laopinionla	-	-	6,074	-	18,885	31,197	33,786	43,300	59,000	81,200
■ koreatimes	-	-	-	-	-	-	-	9,265	11,400	11,700
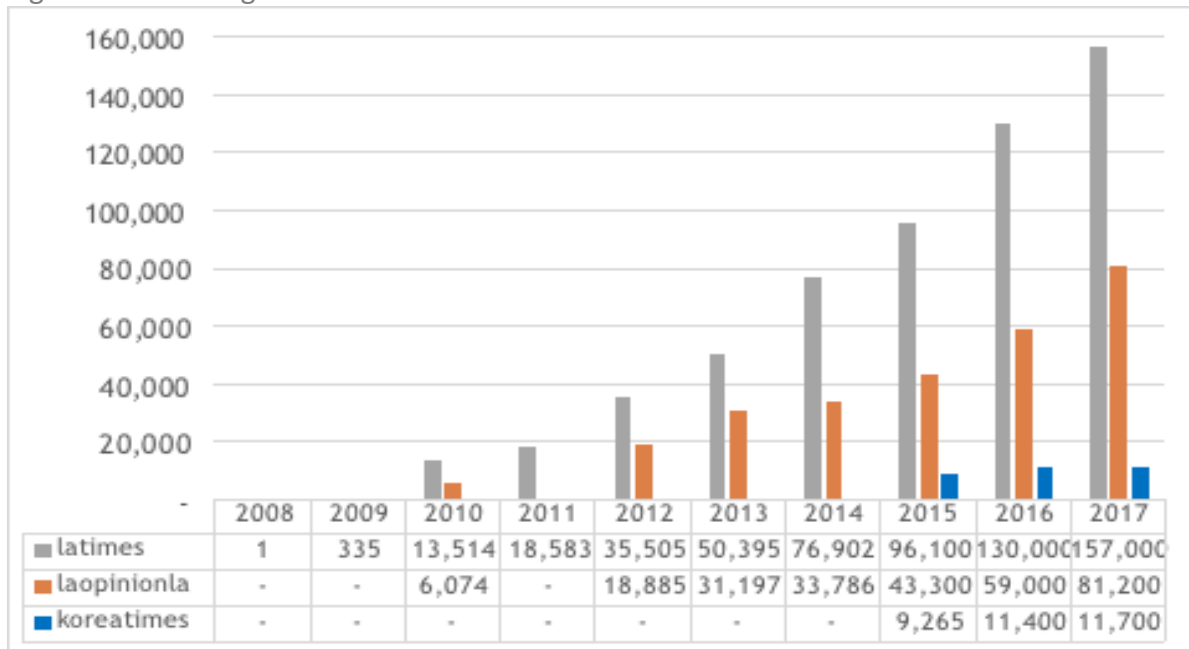
Created by the author using historical data retrieved from the Internet Archive. Data was not available for laopinionla nor koreatimes in 2011.

3.3.2 Technology employed in this study

There is a reason for the term *big data*. It became apparent quickly that personal home computing environments are insufficient to handle the processing and storage demands for an in-depth analysis of a large Twitter data corpus. For this reason, several combinations of remote computing and data storage options were evaluated through trial and error. After some (often frustrating) experimentation, I acquired access to computers in the UCLA Institute for Digital Research and Education (IDRE) through a virtual private network (VPN) connection.

3.3.2.1 NodeXL Pro

NodeXL Pro is a software program that extends the functionality of Microsoft Excel for Windows to permit the visualization of large datasets. Not only does the software capture social network data, but it also has several modeling algorithms that can help researchers explore the way information diffuses among entities in a dataset. For a more detailed account of NodeXL

functionality, see Hansen, et al., 2011.

NodeXL was selected for this study for several reasons. First, the basic version of the software is a free and open-source Excel (Windows) plugin, boding well for the project budget [ha ha] and the likelihood that the technology will remain functional and relevant for the next several years. Second, NodeXL is being applied in a variety of disciplines, which is important for contributing to the diffusion of information studies research. As Nicholas Christakis explains, "[o]ften new knowledge is produced at the intersection of disciplines, and in network science this is happening in spades" (Gudrais, 2010) [nice quote, but it's not exactly about NodeXL; seems you want to state the network analysis tools are continuously changing, so it's good to use something that's been around a while and is likely to remain so]. Finally, the software was developed and is supported by the Social Media Research Foundation (SMRF), "a group of researchers and practitioners working to create open tools, generate and host open data, and support open scholarship related to social media….[who] support graduate students studying and building research related to social media." (SMRF, 2015).

Using NodeXL Pro to analyze social media network datasets, researchers can visualize the overall aggregate structure of social media populations and the artifacts or traces that arise from engagement among the members of these populations. Such visualizations can help researchers answer questions about the interconnection, roles, and information contexts of network members.

The use of NodeXL Pro to identify tentative critical incidents through network analysis to be probed qualitatively is a methodological innovation to the critical incident technique. Rather than identifying events that are presumed to be likely triggers for Twitter activity, this study mitigates the researcher's subjective estimation of what information is of interest to news readers

in the Twitter network by relying on the clustering algorithms in NodeXL Pro to reveal the news items that create "buzz" among various clusters of network users. This is particularly important in the present study, because the analysis aims to explore whether tweet patterns reflect the cultural time orientation of the new organizations' networks. Given that one's way of seeing and interpreting the world is shaped in part by culture, it is necessary to approach the research questions from a position as devoid of preconceptions as possible. If cultural attributes can be detected in network graphs, the NodeXL Pro clustering algorithms may reveal connections that the researcher would not have envisioned or recognized, simply because she interprets the world through a specific cultural paradigm [well, but also, and more fundamentally, because people can't by themselves disambiguate complex network relations]. By analyzing differences in the news organizations' network structures and identifying the news items—as represented by tweets—that generate different types of social media activity, it may be possible to learn more about how members of different cultural groups [again: do you mean the news organization's professionals? Or do you mean the readers who respond to and retweet the news organization's initial tweets?]] value information according to the ways in which they conceive of time.

Network visualizations of interconnected entities can be measured on both aggregate and vertex-specific levels. A variety of aggregate network metrics help make sense of the network graph as a whole. For example, density describes the extent to which network nodes are connected relative to the entire universe of possible connections in the network. Sociologists use network density to assess phenomena such as cohesion, solidarity, and membership (Hansen, et al., 2011, p. 40). Another aggregate metric, centralization, is used to measure the extent to which a network's edges stem from a few key nodes. In conjunction with attribute data [not appropriate term, as "attribute data" in network analysis refers to the usual individual-level or sociological-

level information about a node/actor; indeed the fundamental argument of network analysis is that the traditional analysis of individual attributes alone is insufficient] about a network's nodes, other aggregate metrics are important to the proposed study. For example, homophily is a measure of the similarity of entities that are connected in a network. "Studies typically show that people are connected to others who are similar to themselves on core attributes like income, education level, religious affiliation, and age" (Hansen, et al., 2011, p.40). I relied on the concepts illustrated in Figure 3.10, derived from Mark Granovetter's Strength of Weak Ties Theory, as I assessed the connections among nodes in each dataset.

Figure 3.10 Granovetter's Strength of Weak Ties Theory
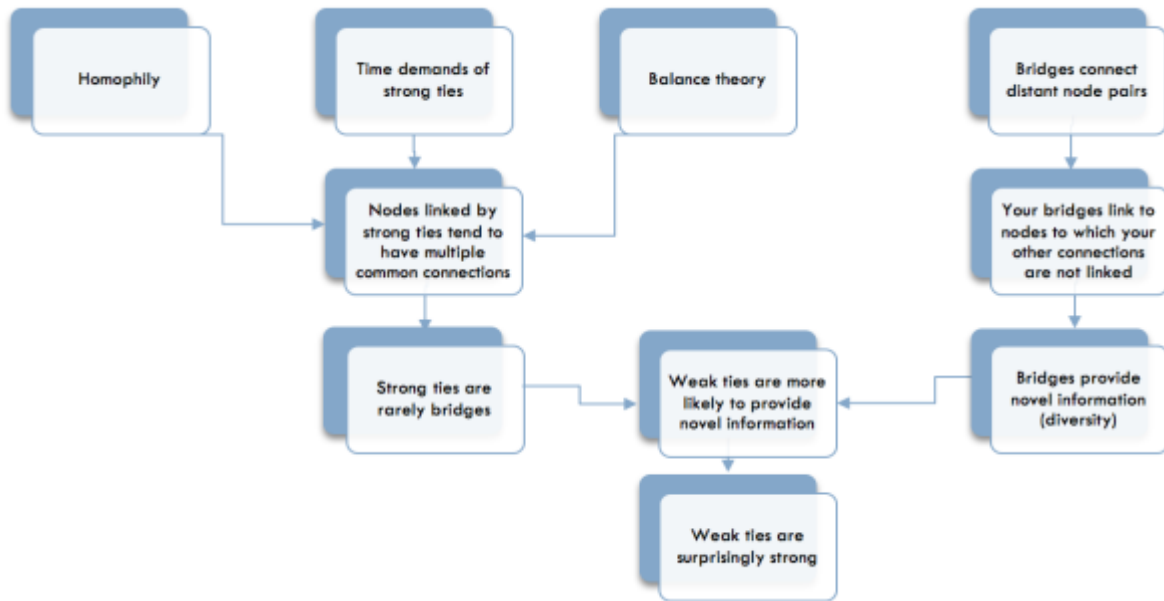
Created by the author, adapted from Granovetter, 1979.

Vertex-specific centrality metrics describe how a network node is positioned spatially in the network. Degree centrality (the number of inbound and outbound edges linked to a node), betweenness centrality (the number of times a node exists on the shortest path between two other nodes), closeness centrality (the average distance between a node and every other node in the

network), and eigenvector centrality (a measure of the relative strength of a node's connections) shed light on different facets of a node's place in the network; they can be used as indicators of a node's influence and importance relative to the rest of the network.

A key concept in network analysis is the idea that individuals may be connected to multiple groups. Thus, specific group boundaries are not presumed in advance by researchers employing the network analysis approach. Rather, "[r]elatively more cohesive or densely connected sets of verticies form regions, also called clusters, that may reflect the existence of groups without regard to whether they are officially recognized or even if members recognize their connections to one another" (Hansen et al., 2011, p. 41). Clusters, or communities, are concentrations of densely connected nodes, which are linked to other concentrations of densely connected nodes by significantly fewer connections. Edges that function as bridges between clusters often are referred to as "weak ties." For an in-depth explanation of the importance of these ties in information diffusion, see Granovetter (1973).

Network clusters can be detected automatically in NodeXL. "[S]ocial network researchers have long recognized that interaction and communication patterns are the tangible proxies by which otherwise ineffable social relationships can be measured" (Hansen, et al., 2011, p. 164). Therefore, I relied on the clusters generated by NodeXL as a way to identify tweets that generate significant activity within each news organization's network. These tweets served as the critical incidents for more in-depth study.

NodeXL also produces detailed network metrics for each network [list them, briefly define them, and indicate which of them you will be using, and why], enabling use of the three-step classification process advanced by Himelboim et al. (2017), discussed in section 4.5.3.

3.3.3 Setting and participants

Digital news production is a particularly appropriate organizational setting for studying

cultural time orientation in information practice. The news items on which people base their

understandings of current affairs are the result of an inherently deadline-driven, continuous, and

competitive decision-making process concerned with the relative importance of information

items for the news-consuming audience. This is the primary concern of news media executives:

When the International News Media Association's Chief Executive Earl J. Wilkinson surveyed

media executives from the world's top news organizations for their top priorities in 2015, 94

percent responded that digital growth is "absolutely critical" or "very important," followed

closely by mobile development and data analytics (INMA, 2015).

Figure 3.11 Digital Priority at News Media Companies

Wilkinson tweeted the consensus that media companies are primarily concerned with creating viable digital media business models during the What Is Journalism? conference in 2015. Created by the author. Source: Twitter.

"If we want to maximise the time, attention, and social reach of the content we produce,

we simply must rethink it from the standpoint of personal relevance" (Gray, 2015). This focus on

personal relevance is both an effort to devise news business models for a rapidly changing

information environment and an indicator of shifting news values in journalism. Researchers

have developed models of news values for 50 years, and the present research is not intended to

challenge this work (e.g., Gatlung & Ruge, 1973; Shoemaker, et al., 1987). Rather, this study

aims to explore how such news values may be evaluated in conjunction with cultural time orientation using the TAFIP.

3.3.3.1 News and culture

The present study deploys the TAFIP in the news domain for several reasons. First, the recognition that culture manifests in the prioritization of values translates well to the prioritization of news coverage, because each news organization's objective is the timely provision of valuable and/or interesting information to its particular audience. For example, the mission of the *Korea Times* is to provide the Korean-American "community with quality journalism, while displaying dedication to community services" (Korea Times, 2014). Second, as section 2.6.1.3 described, Hofstede's research identifies cultural dimensions for nation states, which can be matched directly to the cultural identities of the audiences targeted by the news organizations. Finally, "news values" have been the focus of considerable study; news organizations tend to determine the value of a news item by assessing a relatively universal set of criteria (see Table 3.1).

Table 3.1 News Values

Value	Definition
Composition	The desire to maintain a diversity of types of news items covered creates a dynamic and continuous assessment of news value
Conflict	Disputes create a sense of urgency, as well as interest
Continuity	Readers must be able to make sense of the news item in their world
Cultural specificity	An ethnocentrism prioritizing stories about people who are similar to the news coverage decision makers and readers
Negativity	Bad news is more likely to garner attention than good news
Personalization	Emphasis on human actors versus abstract entities
Reference to elite nations	Prioritization of events in first-world nations
Reference to elite persons	Prioritization of activities involving politicians, royalty, celebrities, corporate leaders, and other popular people
Relevance	Event impinges on the lives of the target audience, physically or figuratively
Simplification	Clear significance and reduction of opportunities for varied interpretation
Timeliness	Recent or unfolding events
Unexpectedness	Novelty enhances potential for garnering attention

Created by the author and adapted from Stromback et al., 2012, and Allan, 2010, pp. 57-58. (For an extensive examination of studies on news values, see Caple and Bednarek, 2013.)

Given the heavily deadline-driven nature of news and the rapid pace of social media

journalism, digital news organizations can be considered ideal settings for studying cultural time orientation as a feature of the information context. Similarly, the exponential increase in news and information sources since the advent of social media networks on the internet means the task of determining news value and newsworthiness has taken on greater significance. "News selection and gatekeeping will remain among the most important functions of the news media" (Shoemaker & Vos, 2009). Despite a theoretical distinction between news and newsworthiness, "what people *even journalists* think is newsworthy is not necessarily what becomes news" (Shoemaker & Cohen, 2006). The organizational environment and the media industry impose expectations and structural limits on journalistic information practice. These limits include the routines, values, and norms that have codified the news values of American Journalism over the past 250 years, as summarized in Table 3.1. "These routines ensure that the media system will respond in predictable ways and cannot be easily violated. They form a cohesive set of rules and become integral parts of what it means to be a media professional" (Shoemaker & Reese, 1991, p. 101).

Not only must news organizations disseminate information in a timely, accurate, and creative way, but they also must adhere to the tenets of the Fourth Estate. That is, news organizations must act in the public interest and maintain the public's trust, while contributing to and preserving their financial solvency. Since "[r]outine procedures, cultural categories, and social positions" influence interpretation (Beeman & Peterson, 2001), it behooves news organizations to understand that evaluation (both by the organization's professionals and by the audience) occurs within cultural frameworks, and to cater to the culturally informed needs and interests of the target audience. For news items that are in the public interest, yet not *of* interest to the audience, there is an ethical obligation to present the information in a manner that will

encourage the audience to receive it. Similarly, news organizations are obliged to distribute news items that are of interest to the audience to contribute to the organization's popularity and, thus, the bottom line. Therefore, it is advisable for news organizations to ensure they prioritize information effectively; understanding how cultural time orientation may affect news valuation could make this mandate easier to achieve.

Allan explains that "while news values are always changing over time and are inflected differently from one news organization to the next, it is still possible to point to these and related news values as being relatively consistent criteria informing these assignments of significance" (Allan, 2010, p. 58). Thus, the people who determine the prioritization of coverage assess news items for these elements within a context that includes cultural, organizational, social, and individual values. Allan notes that the ways in which journalists and other news decision makers frame the news items under consideration "takes on a distinct ideological significance" (Allan, 2010, p. 58). Harkening back to the desire for information practice that reflects a natural tendency, Allan draws on Todd Gitlin's description of news frames as vehicles for making "the world beyond direct experience look natural; they are 'principles of selection, emphasis, and presentation composed of little tacit theories about what exists, what happens, and what matters'" (Allan, 2010, p. 58). Prioritization of news coverage, then, results from a subjective combination of values.

3.3.3.2 News organizations under study

As discussed in the introduction, three news organizations are the general focus of this study: *La Opinión, The Los Angeles Times,* and *The Korea Times,* selected for their common geographic location and distinct audience cultures. Following a brief update on circulation and employment in the industry in general, this section describes each news organization's mission, organizational structure, and readership, with a focus on news values—both explicit and

implicit—that influence their prioritization of news items for distribution via Twitter. Included in these descriptions are accounts of ownership and routine practices relevant to social media distribution.

In line with the general decline in print newspaper circulation since the Great Recession of 2008, all three news organizations have experienced significant losses in total print subscriptions, as shown in Figure 3.12.

Figure 3.12 Daily Newspaper Circulation Trend
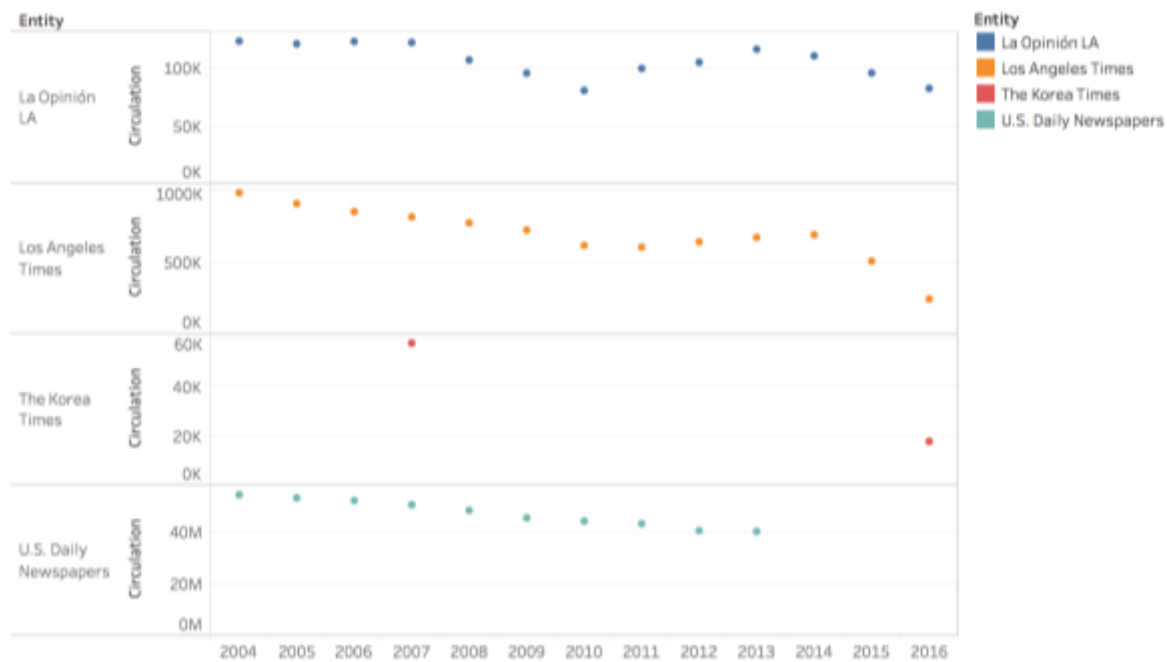
Created by the author with data from Pew Research, American Society of News Editors, Los Angeles Business Journal, and the three news organizations under study.

Overall newsroom employment has fallen by more than 39% since 1994, with women losing their jobs at the same rate as men, although the proportion of minority employees remains 13% (American Society of News Editors, 2015). Thus, the competing mandates of financial solvency and civic watchdog are taking a toll on news organizations in the digital era, with no signs of improvement in the past 20 years.

A few general characteristics of news organizations merit review prior to description of

each entity. First, one premise of the study is that news organizations cater to the needs of their target audiences. "Media organizations generally focus on a target audience within their circulation area, and content is generally geared toward the organization's perception of that target audience" (Shoemaker & Reese, 1996, as cited in Armstrong & Gao, p. 4). In addition to prioritizing news items according to the perceived information needs of the target audience, two journalism values are particularly relevant to the present study: proximity and prominence (Stovall, 2002). Proximity suggests a focus on the people and events near the coverage area of the news organization. Prominence is a focus on public figures and celebrities, which typically attract audience interest. Since all three entities in this study are based in Los Angeles, it is assumed that they will have a common sense of these two news values.

In addition, Shoemaker and Reese note that the practical considerations of news item prioritization lead to the development of routines that help guide action (1996, p. 102). The routines followed by those who were responsible for social media posting on behalf of each organization prior to automation, while likely not identical, were very similar with respect to the activities and responsibilities depicted in Figure 3.13.

Figure 3.13 Key Activities and Responsibilities of Social Media
Managers at News Organizations

Recognizing opportunities
• Monitoring trends
• Discerning patterns of engagement
• Monitoring developing news items
• Identifying unmet reader needs

Creating strategic engagement campaigns
• Brainstorming
• Collaborating
• Writing
• Designing
• Repurposing
• Differentiating
• Personalizing

Gathering information
• Meeting with colleagues
• Monitoring newsfeeds
• Engaging with Twitter followers
• Monitoring feedback from readers
• Analyzing marketing data

Executing strategic engagement campaigns
• Tweeting
• Monitoring
• Responding
• Tweaking
• Testing
• Reporting

Critical incident

Created by the author and adapted from DeVito, 2104; Haslanger, 2015a, 2015b, 2106;
Schulte, 2014; Willnat & Weaver, 2013.

There are two levels of study; at the node level, objects of study include the order in which each news organization posts news items to its Twitter feed and the path of each CIT in each network. At the network level, the networks arising from information exchange via Twitter with *La Opinión, The Los Angeles Times,* and *The Korea Times* are the general focus of this study.

The Korea Times. Founded in 1973 and based in Los Angeles, The Korea Times Los Angeles, Inc., is the parent company of *The Korea Times,* the largest and oldest Korean-language newspaper in the United States. The parent company also operates television stations that broadcast programs in Chinese, Japanese, Korean, and other Asian languages, serving the New York, Washington, Chicago, Atlanta, and Los Angeles markets. *The Korea Times* is a daily

newspaper with a circulation of 91,500 (Korea Times, 2015, 2016).

South Korea's media history has several parallels to that of the United States, particularly with respect to the perception that the press serves a democratic purpose. "While the press is commercially sponsored and motivated to maximize profits, it often is considered an institution of public good or as a part of the ruling elite" (South Korea, 2016). Though these are characteristics of the media operating within South Korea, the history is relevant from a cultural perspective to *The Korea Times,* which operates independently in the United States. South Korea's rapid industrialization has led to a culture that embraces new technology, yet struggles with conflicting values with respect to the media. "The press [in South Korea] enjoys a constitutionally guaranteed freedom, but often it behaves as if it doesn't have much freedom in its coverage of certain sensitive subjects such as the powerful military or the incumbent president" (South Korea, 2016). Thus, some freedoms may not be exercised if they run counter to what traditionally has been acceptable journalistic practice. It is unclear how much of this reticence persists at *The Korea Times.*

South Korea's population is homogenous compared to the United States, with variations in dialect, but not language. Characterized as a "single-race society," South Koreans typically practice either Christianity or Buddhism. Confucianism is the culture's unifying ideology. The adoption and use of the internet and online versions of the press are extensive in South Korea, and are assumed to be so among Korean-Americans, as well. Though there are few studies comparing the values of Koreas and Korean-Americans, an interesting examination of the persistence of Confucian values among Korean-Americans in Detroit reveals that "[e]ven though immigration provided Detroit Koreans with a far more modern lifestyle and greater contact with Western practices, other aspects of their lives seem to have contributed to the maintenance of

their ethnic values" (Hyun, 2001).

The literacy rate among adults in South Korea is estimated to be greater than 98%, so high that the Ministry of Education no longer measures it (South Korea, 2016; Hyun, 2001). In the United States, "Koreans exhibit higher levels of educational attainment than all U. S. [population] groups, including native-born Whites" (Ramakrishnan, 2016, p. 5).

Among voters registered for the U. S. 2016 presidential election, 33% of the Korean-American population relied exclusively on ethnic media for political news, and 18% engaged in commenting or posting on social media networks about political issues. (Ramakrishnan et al., 2016, pp. 35-40). Democratic partisanship is strong among Korean-Americans: 53% say they are Democrats; that proportion rises to 70% when including Korean-Americans who say they "lean toward" the Democratic Party (Ramakrishnan et al., 2016, p. 10). Korean-Americans, including leaners and excluding undecided, overwhelmingly supported Clinton in the 2016 election, with 79% choosing Clinton, 6% voting for some other candidate, and 15% casting a ballot for Trump (Ramakrishnan et al. pp. 15-19).

"Since 1998, Koreatimes.com has been a leader for online ethnic media. Our website provides users with daily reporting and in-depth analysis of the latest news from Korean American communities, Korea, and also provides content from national and international wires" (Korea Times, 2016). *The Korea Times* also offers "e-newspaper services for our core website visitors and print subscribers," as well as smartphone applications (Korea Times, 2016). As a privately held company, *The Korea Times* does not share publicly information about its circulation and operations, though estimates have been extrapolated by organizations such as the Pew Research Center. As a point of comparison, each of the three news organizations in this study commands advertising rates that are the highest among its competitors in the Los Angeles

market (Pew, 2015).

South Korea is the most future-oriented culture on the spectrum of time orientation, with a score of 100. Characteristics associated with cultures that are very future oriented include practices that support a virtuous and secure future, such as frugality, perseverance, adaptability, honesty, accountability, and self-discipline. Members of such cultures focus on a respect for tradition in their contemplation of the past and present. This may seem counter-intuitive; however, enacting traditional practices reinforces and perpetuates a culture's beliefs, practices, and norms, increasing the likelihood that these customs will persist in the future. Members of future time oriented cultures tend to have a relatively conventional mentality and place a high value on personal steadiness, stability, and maintaining good relationships (Hofstede, 2010). Future time oriented organizations tend to invest in prevention and maintenance, continuous improvement, strategic planning, and fostering of strong relationships (Hay & Usunier, 1993; Hayes, 1981; Hofstede, 2010; Ryu & Cook, 2005; Voss & Blackmon, 1998).

In the news media context, these characteristics may translate to the prioritization of news items related to planning for events in the distant future, such as saving for retirement and children's education. Other types of stories that may be prioritized by future time oriented news organizations include personal-interest stories, personal finance columns, and coverage of community events. In addition, managers at future time oriented news organizations likely work closely with those responsible for either posting news items to Twitter or finding and implementing software to automate the function.

La Opinión. *La Opinión* is the largest Spanish-language daily newspaper in the United States, with a circulation of 116,060 (Pew, 2016a). Published by ImpreMedia in Los Angeles and distributed throughout the six counties of Southern California, it is the second-most read

newspaper in Los Angeles (after the *Los Angeles Times*). *La Opinión* has diversified its coverage from a strictly Mexican focus to include news of interest to the Central American, South American, Cuban, and Puerto Rican populations in Los Angeles. Former Publisher Ignacio E. Lozano, Jr., explains, "Our mission was no longer to be a Mexican newspaper published in Los Angeles, but an American newspaper that happens to be published in Spanish" (Leonard & Lugo-Lugo, 2015, p. 412). In 2012, a subsidiary of the Argentine newspaper *La Nación* purchased a majority share of Impremedia and *La Opinión*.

Circulation for Spanish-language daily newspapers in the United States declined for a second year in 2016; *La Opinión* experienced at 22% drop in daily print subscriptions, at fewer than 100,000 in 2016. However, digital readership increased in the Hispanic-language market, primarily through mobile traffic. "A likely factor influencing this pattern is that Hispanics are more likely than whites to be smartphone-dependent, meaning they don't have a broadband connection at home and have few other options for going online; this is true even though smartphone ownership rates are similar for the two groups" (Pew, 2016a).

Hispanics make up 39% of California's population, numbering almost 15 million residents. The Los Angeles-Long Beach-Anaheim market is home to 6 million Hispanics, most of whom were born in the United States (Krogstad, 2016). Hispanics of Mexican origin make up a vast majority of this population in the Southwest, and population growth has slowed since the recession.

Since a majority of *La Opinión's* readership is of Mexican heritage, Mexico's cultural time orientation score is used as a proxy for the news organization. Mexico's cultural time orientation falls in the lowest quartile of the time orientation spectrum, with a score of 24. Characteristics associated with cultures that are past and present oriented include a strong

concern for maintaining the status quo, a circumspect view of social change, and deep respect for tradition. Members of such cultures focus on the here and now, and place a high value on lived experience. They consider truth to be absolute (Hofstede, 2010). Organizations in such normative societies emphasize employment mobility and short-term return on investment. In the context of news prioritization, these traits may manifest a preference for news items from sources with long-standing authority, a focus on meeting daily and quarterly performance goals, and suspicion of disconfirming information. Employees responsible for posting news items to Twitter likely have significant autonomy and are held accountable for short-term performance.

The Los Angeles Times. A daily newspaper owned by Tronc (formerly Tribune Publishing), *The Los Angeles Times* is the fourth-largest daily newspaper in the United States and among the top five newspaper websites in the country. *The Los Angeles Times* combined its print and Web operations in 2007, in response to an unfavorable analysis of its online engagement with readers. By 2011, the organization's Web traffic had increased, largely as a result of search engine optimization and allocation of resources to social media activity. In 2014, the organization redesigned its website, introducing a visual browsing mode; a continuous, scrolling news feed; and pre-written tweets and status updates to accompany articles. Circulation of the daily print newspaper has declined with the rest of the industry, at fewer than 100,000 in 2016 (Pew, 2016c). *The Los Angeles Times* serves the American market concentrated in Southern California, and has complementary publications geared toward other audiences, such as *Hoy Los Angeles,* which targets the Hispanic-American audience (Los Angeles Times, 2014).

The United States scores 26 on the cultural time orientation spectrum, similar to Mexico. As a normative society, Americans tend to exhibit a belief in one absolute truth, and strong opinions about right and wrong, good and evil. Like Mexican organizations, American

businesses focus on short-term performance measures and rapid return on investment (Hofstede, 2010). High value is placed on present experience, and time is considered a valuable asset. These characteristics may translate to news organizations through a focus on providing readers with immediate reports on breaking news, which may present a challenge to fact-checking; as such, American news organizations may prioritize news emanating from long-standing authoritative sources and exhibit skepticism of disconfirming information from other sources.

3.3.3.3 Perceptions of journalism

The exponential growth of news content on the internet and the accelerated pace of the digital news industry, combined with the special role that the media plays in democratic society, create unprecedented vulnerabilities to misuse and abuse of information. This volatile intersection of information, technology, and culture begs the attention of information studies researchers.

Journalists accrue social capital for their dogged investigations into corruption and unflagging commitment to protecting source anonymity, sometimes at great sacrifice, to facilitate freedom of expression without fear of retaliation. For example, the quintessential case of investigative reporting in American Journalism, Bob Woodward and Carl Bernstein's 1972 series exposing the Watergate scandal and leading to Nixon's resignation, garnered a Pulitzer Prize for Investigative Reporting for the *Washington Post*. The duo popularized their investigation, first through the 1974 publication of a book about the case, *All the President's Men*, and then the public imaginary of the investigative reporter transformed from inquisitive dork to brilliant hunk, as Robert Redford portrayed Bob Woodward in the 1987 film of the same title. In 2010, the Library of Congress selected the Academy Award-winning film for the National Film Registry, which preserves films of cultural, historical, or aesthetic significance. "Journalists are often romanticized as crusading editors or as fearless investigative reporters like

Bob Woodward and Carl Bernstein, whose work helped bring down a president and was popularized in the movie *All the President's Men.* Library shelves are packed with journalists' memoirs, telling of their hobnobbing with the great and near-great" (Shoemaker & Reese, 1991, p. 101).

This glamorous and righteous perception of American Journalism persists today (if shakily), but the ability to underwrite such laudable endeavors is compromised by the dire financial straits facing news organizations. In the second half of the 20th century, news coverage transitioned to cover more business, sports, and entertainment, with a focus on celebrity and capitalistic values. The rise of neoliberalism and burgeoning capital markets toward the end of the 20th century, combined with internet-enabled new media and significant international developments, gave rise to a period of rapid economic expansion and increased productivity, ending the century with the stock market above 10,500 for the first time, despite Alan Greenspan's warning about "irrational exuberance."

Greenspan's observation was apt. The early years of the 21st century brought the burst of the "dot-com bubble" and the September 11 terrorist attacks, followed by the so-called War on Terror and the sub-prime mortgage calamity that triggered the Great Recession of 2008. While the growth of the internet spurred globalization and innovation in the technology and communication sectors, a series of scandals contributed to increasing mistrust of the U. S. government and powerful corporations, and renewed concerns about the disproportionate costs of advancements in the technology sector to under-represented socioeconomic classes (e.g., gentrification, H-1b visa diversion to technology companies like Google and Facebook). In particular, the sub-prime mortgage crisis that triggered the Great Recession exemplified the concentration of wealth and power among the top 1% (actually, it's more like the top .1%) of the

U. S. population. Social movements, such as Occupy Wall Street and protests against the outcome of the 2016 presidential election, signal that we are in a period of widespread dissatisfaction and disillusionment, which would indicate that the news industry should be flourishing. However, massive consolidation in the news industry, the rise of citizen journalism, and the perception of widespread media bias, have wreaked havoc on the news media sector, and made way for misinformation, disinformation, and fake news.

Compounding the gradual decline in newspaper circulation and advertising revenue from radio, television, and internet competition, the Great Recession forced several news organizations to shutter their operations; those still in business have implemented a host of strategies to generate digital news revenue. These strategies include cutbacks in every aspect of news publishing, including organizational bankruptcy restructuring; reduction in salaries, benefits, and the number of employees; elimination of low-performing content sections, editions, and delivery zones; and editorial tradeoffs that would make Walter Cronkite roll over in his grave. All of these measures result in increased workload for those journalists who remain employed (which decreases their ability to produce quality investigative reporting), diminished local news reporting, and a general homogenization of news content, which has sweeping implications for the formation of public opinion. These austerity measures came to a head with the 2016 U. S. presidential election, during a campaign that focused public attention on media bias, stemming from seeds of mistrust sown during the sub-prime mortgage fiasco that triggered the Great Recession.

The tension at the heart of the Fourth Estate stems from the opposing interests of financial solvency and public advocacy. Oppositional "values must be managed and adapted to the ideological requirements of the society" (Shoemaker & Reese, 1991, p. 242).

3.3.3.4 Algorithmic bias and the bottom line

Many news organizations, in attempts to reconcile their watchdog role with profitability, have implemented algorithms to aid in the prioritization and distribution of news items on social media. This is not surprising, as news organizations tend to focus on processes and systems in their efforts to improve organizational decision making. As the economics of journalism has become more challenging, news organizations have embraced the notion that automated news evaluation and prioritization will create economic efficiencies and opportunities for growth. In keeping with this trend, each of the news outlets in this study moved from a human-judgment-based system for prioritizing social media posts to an automated one during the course of this study.

The roots of the shift toward artificial intelligence lie in the temporal characteristics of journalism. The Enlightenment often is characterized as having been contingent on the invention of the printing press. Mass distribution of printed information narrowed the divide between those with the wealth, access, and literacy to read published material and those who were not as fortunate. Similarly, networked communication technologies enabled faster sharing of information across distance, leading to assumptions about the promise of the internet as an equalizing technology. Thus, the internet has given rise to expectations of instantaneity and equitable access to information, but has drawn scrutiny for enabling the distribution of biased perspectives as the news industry struggles to adapt to new business models in light of increased competition and extreme financial pressures.

One might assume that simply removing bias would be an expedient solution, and that this is best accomplished by automating the decision-making process. However, the algorithmic turn—the implementation of software to automate decision making previously the purview of human (in this case news) employees—has implications for how people engage with information

in all aspects of life. "Gaps between the design and operation of algorithms and our understanding of their ethical implications can have severe consequences affecting individuals as well as groups and whole societies" (Middlestadt, 2016, p. 1). Trusting the evaluation of information with respect to relevance and priority to a script holds promise for expediting work and standardizing organizational responses to information, yet scholars have called attention to the potential for algorithms to contribute to a variety of inequitable information situations. "Algorithms form the technofunctional basis of new services and business models that economically challenge traditional industries and business strategies. These economic changes and challenges are accompanied by and interact with significant social risks such as manipulation and bias, threats to privacy and violations of intellectual property rights that compromise the economic and social welfare effects of algorithmic selection application" (Latzer et al., 2014, p. 1). These implications are particularly important when it comes to news organizations, which, as we saw earlier in the chapter, hold sway over public opinion and historically have been accorded authority in the minds of the citizenry.

It is understandable that people would associate computer programs with the characteristics of the scientific method. The whole point of the scientific method is to approach the study of phenomena in a systematic manner designed to banish bias to the realms of those with an agenda. When scientists use the scientific method, they apply specific reasoning principles to data that has been measured and collected in specific, standard ways. The scientific method is designed to minimize the influence of expectation. We may hypothesize about what we will find, but the research aims to seek truth unencumbered by our expectations. If an algorithm is merely a computer program, composed of a bunch of conditions for action, how can it be biased?

To answer this question, researchers have provided numerous examples of the pervasiveness of algorithmic bias. I present a few in this chapter; for an in-depth review of algorithmic bias, see Shorey and Howard (2016).

Algorithms come in a variety of forms across every public sector, and range from simple to complex (Simon, 1979). For example, researchers have studied dispute-resolution software algorithms (e.g., Raymond, 2014; Shackelford & Raymond, 2014); systems like Yelp and Match, which group and compare users to provide customized recommendations (e.g., Luca, 2015); software that aids physicians and other health care providers in diagnosis and treatment recommendations (e.g., Mosa et al., 2012); and predictive policing systems—think Minority Report—that are designed to help law enforcement professionals prevent and manage criminal activity (Middlestadt et al., 2016).

People who are unfamiliar with how algorithms work often assume that their scientific nature constitutes an objectivity that can't be attained by human judgment. However, "[a]lgorithms are inescapably value-laden" (Middlestadt, 2016, citing Brey & Soraker, 2009; Wiener, 1988). A healthy literature on the ways in which developers and users of algorithms inscribe their biases forms the basis of the burgeoning field of critical algorithm studies. Further, algorithm design cannot ensure its ethical application. For example, Amazon's Prime delivery algorithm was shown to discriminate against people living in neighborhoods populated primarily by people of color (Angwin & Mattu, 2016).

Algorithms (especially those that evolve, called machine learning algorithms) are hard to evaluate, because they introduce uncertainty in ways that may be recognized only after implementation. Thus, assessment of algorithm ethics may require various combinations of auditing (of both the code and its outcomes), debiasing training for developers, public literacy,

regulation, and preference for open-source alternatives (Burrell, 2016). As more news

organizations turn to algorithmic solutions, the algorithms that prioritize news for distribution

through social media networks will increase in complexity and become inter-dependent, using

one another's outputs as inputs for decision making (Tutt, 2016). "The resulting gap between the

design and operation of algorithms and our understanding of their ethical implications can have

severe consequences affecting individuals, groups and whole segments of a society"

(Middlestadt, 2016, p. 2). The repercussions for matters like the 2016 presidential election, in our

current environment—44% of American adults turn to Facebook as their primary news source

(Pew, 2016c)—are monumental. As Zeynep Tufekci says, "Facebook's algorithm is central to

how news & information is consumed in the world today, and no historian will write about 2016

without it" (Tufekci, 2016). Middlestadt et al. (2016) advance six types of ethical concerns raised

by algorithms, depicted in Figure 3.14.

Figure 3.14 Six Types of Ethical Concerns Raised by Algorithms
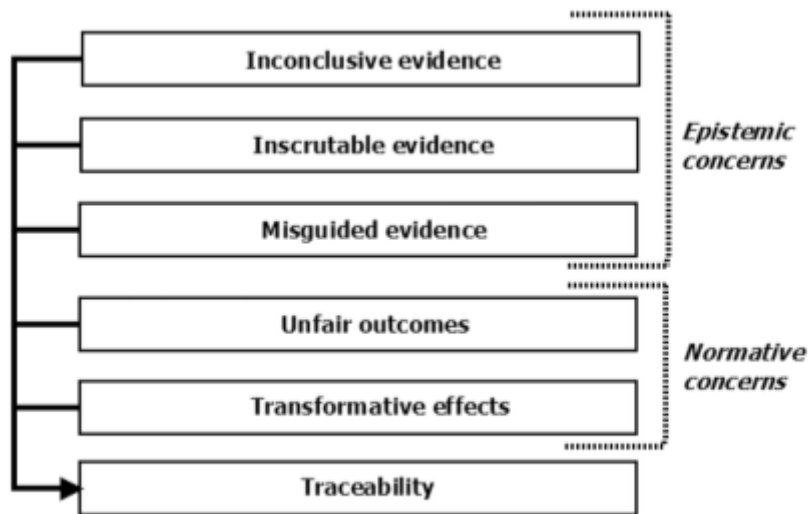
Reprinted under a Creative Commons license from Middlestadt et al., 2016, p. 4.

"Although the complexity of these algorithmic platforms makes them seem impossible to

understand, audit studies can crack the code…[by] testing algorithms on the public's behalf and

investigating and reporting situations where algorithms may have gone wrong" (Sandvig, 2014, p. 9.

When researchers study algorithmic bias, they seek to call attention to the ways that important information practices fail to represent the interests of all people equitably. One of the best examples of such research comes from Safiya U. Noble, who was troubled by the way the Google search algorithm handled search queries like "black girls" (Noble, 2012). She approaches her examination of the first page of results of a Google search on "black girls" through a Black feminist lens, which provides a basis for interrogation that reveals far-reaching implications of the assumptions and motivations embedded in the Google algorithm. Other scholars had investigated commercial search engines, critiquing the prioritization of the organizations' own economic interests and demonstrating that search is, certainly, not neutral (e.g., Nissenbaum & Introna, 2000; Diaz, 2008; Vaidhyanathan, 2011), but Noble's approach addressed racist and sexist bias in commercial search engines for the first time. Perhaps the most telling acknowledgement of the importance of Noble's study is the fact that Google has since changed its algorithm in response (though this change improves search results for "black girls," but does not affect results for queries on other ethnic and gender groups) (Noble, 2018).

Several researchers are working in the realm of critical algorithm studies, though none has addressed the ability of Twitter algorithms to replicate cultural time orientation. A summary of findings that may be relevant to the present study appears in Figure 3.15, including an overview of foundational works concerning information, power, and culture in print news information practices, as well as more recent research on the effects of algorithmic news selection on opinion formation and news readers' information behavior.

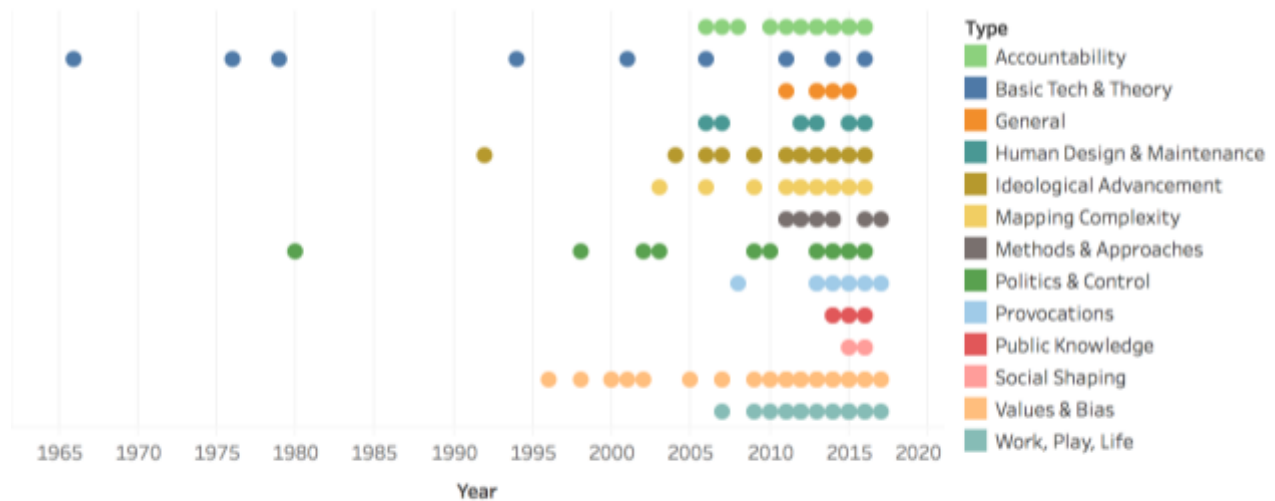Figure 3.15 The Emerging Field of Critical Algorithm Studies

Figure depicts publications in Critical Algorithm Studies in 13 subcategories. Details (author, title, publication date, hyperlink) may be accessed from the interactive version at http://dianaascher.com/diss_viz. Created by the author; adapted from Gillespie & Seaver, 2016.

3.3.3.5 Automated social media solutions

In light of the significant financial challenges facing news organizations in the digital era, automation through algorithms has become a popular way to streamline content distribution via social media, and *The Korea Times, La Opinión,* and *The Los Angeles Times* are no exceptions to this trend. There are three general approaches to automating social media engagement, which are contingent on financial resources and technological sophistication, among other factors. In smaller organizations with tight budgets, a common approach to social media engagement is to ask the Millennials in the office to champion the effort on behalf of the organization. The assumption with this approach is that these digital natives are best suited for the task; little consideration tends to be given to the effects of this assignment on maintaining news values on social media. When there is a budget for social media engagement, many news companies outsource social media development or work with large news aggregation and distribution companies like Echobox and SproutSocial to create quasi-custom solutions. Echobox's clients include several French newspapers, platform-spanning news and entertainment group Vice

Media, and many other news organizations (see Figure 3.17). However, its management and engineering team lacks journalism experience, other than the CEO's internship at the *Financial Times* (O'Hear, 2014). Finally, some news organizations rely on their own developers to build social media engagement solutions in-house; this method tends to reflect an assumption that the organization's own people understand the complexity of the task and are best equipped to integrate the social media function into existing technology-enabled information practices. It fails to recognize that in-house developers may not appreciate the complexity and inherent vulnerabilities of the social media ecosystem.

In order to determine when each news organization made this transition and what algorithmic solutions they deployed, I examined the source code of their websites over time. In this section, I describe the results of this digital forensic analysis and describe how each of the three news organizations automates its Twitter engagement.

The Korea Times. In 2014 and 2015, social media activity at *The Korea Tim*es was managed and implemented by Dug Jun, director of new media, circulation, and production. News items were posted manually in 2014; over time, several off-the-shelf software solutions were implemented to automate distribution of content to the newspaper's website and to Twitter and Facebook. *The Korea Times* website runs on the WordPress platform, which is the most popular website content management system in the world (W3Techs, 2016). Using jquery scripts from the $39 MaxMag WordPress template and a few WordPress plugin extensions, such as SendToNews (a sports video syndication provider), the news organization's content is displayed on its website and shared on Facebook and Twitter. On further examination, though, it is apparent that much of the content is outdated. Most of the Twitter activity in the network consists of tweets that mention @koreatimes, rather than tweets emanating from the news

organization. Since the fall of 2015, the news organization has been advertising for a social media manager. By the end of October 2015, Jun was no longer employed at *The Korea Times*. During the summer of 2016, a handful of interns posted essays on the website and supplemented the automated social media activity with a few tweets. Since the company still seeks an online editor, it may be that no one is maintaining the organization's Twitter engagement. *The Korea Times* has taken an approach common among small- and medium-sized organizations—find a Millennial to do it. Figure 3.16 is a times series graph of *The Korea Times's* tweets from March 2015 through January 2017.

Figure 3.16 Time Series Graph of koreatimes Tweets

koreatimes Tweets 2015-2016
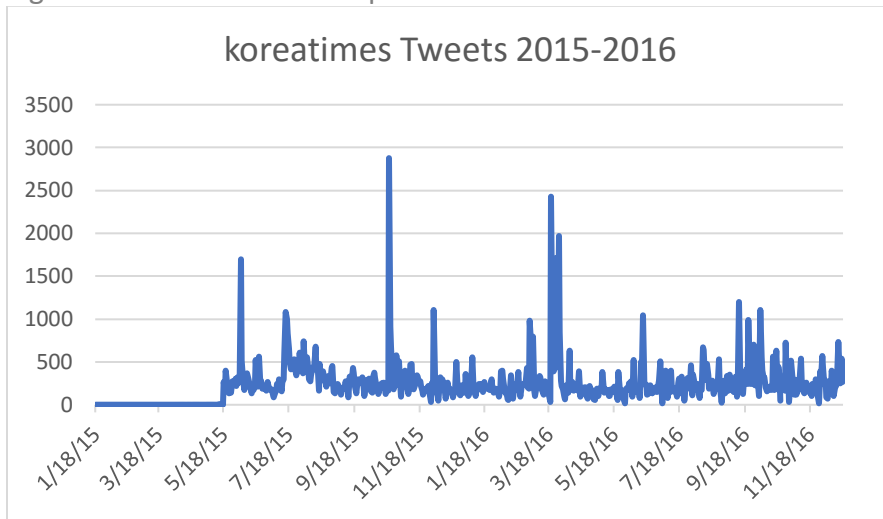
Source: NodeXL Pro.

La Opinión. *La Opinión* approached social media automation differently. Through discussions with Rafael Cores, Vice President of Digital Content at ImpreMedia, I learned that *La Opinión's* parent company has been using Echobox to post updates to the Facebook pages of each of its media properties for some time. Cores explained that Twitter updates were handled manually by social media managers, but that the organization was not actively managing engagement on Twitter (Cores, 2016). The earliest data collected from *La Opinión's* Twitter feed showed a few news items generated using Echobox had made their way from Facebook to

Twitter. Since there were only a few of these Echobox-generated news items in the March 2015

data, this period was selected as the pre-automation period. In the pre-automation period, *La

Opinión* was still employing humans to manage its Twitter posts, but its Facebook activity was

automated.

Figure 3.17 Echobox Client List

(as of 09/10/16)	
20 Minutes	La Opinión
Albuquerque Journal	Le Monde
Aslaone	Libération
BFM.tv	Pioneer Press Twin Cities.com
Big Think	Pittsburgh Post-Gazette
Clarín	The Business Times
Computer Bild	The Mercury News
El Diario	The Straits Times
eNCA	The Telegraph
La Nacion	Vice

Created by the author; adapted from Echobox, 2016.
In the post-automation period, source code reveals
that a majority of *La Opinión's* tweets emanate from
the Echobox software in use at ImpreMedia.

The Los Angeles Times. The approach selected by the new owners of Tronc (formerly

known as Tribune Publishing, parent of *The Los Angeles Times* and several other leading news

organizations) falls into the third category of social media solutions, in which news outlets with

more resources will assign a team to develop social media management software in house.

Majority shareholder Michael Ferro announced last summer that Tronc would leverage artificial

intelligence to generate multimedia news content. *Los Angeles Times* employees circulated an

open job listing seeking a content specialist to support "our news content harvesting robots."

Some digging reveals that Tronc Director of Data Science and Engineering Alejandro

Cantarero earned his doctorate in mathematics from UCLA in 2011, and worked for a few startup

software development firms prior to joining Tronc in March 2016. Cantarero's conference paper

on detecting newsworthy social media posts lends some insight to conjecture about the new

"social media funnel" that Ferro says will save the struggling news organization. The paper

details a method for detecting newsworthy information in user-generated video content.

(Cantarero, 2012; YouTube, 2016; Tronc, 2016). Combined with the *Los Angeles Times's* previous experiments in automatic news generation—Mapping L.A. and The Homicide Report—Cantarero's background suggests that the *Los Angeles Times* now creates news articles from user-generated social media posts (particularly video posts) by detecting signals in the social media data that indicate high potential for relevance and interest among the target audience.

3.4 Data Sources and Collection

With a thorough understanding of how members of a Twitter network engage with information and how each study site is contending with changing expectations in the digital context, I used network graph metrics generated by NodeXL Pro to describe each network, characterize subgroups as indicators of critical incidents, and identify specific nodes of influence associated with each critical incident. Aggregate graph metrics such as network density can be used to compare connections within communities. Tracking aggregate graph metrics over time can help evaluate the effectiveness of interventions on the network as a whole. Graph metrics can also be used to identify cliques and persistent social roles that appear in many network groups.

Six datasets were collected for this study; the specific focus of study for the social and informetric network analyses is composed of (1) three pre-automation datasets, each consisting of the tweets disseminated by the social media managers via the official Twitter account for each news organization (hereafter called original tweets), as well as the tweets and metadata representing public engagement with each original tweet on the Twitter platform; and (2) three post-automation datasets, each consisting of the tweets prioritized and posted to each news organization's official Twitter account through automated software, along with the correlating tweets and metadata generated by audience engagement with original tweets.

Only data pertaining to the official Twitter streams as certified and indicated by Twitter on each organization's Twitter profile page comprise the datasets for each news organization. Twitter streams for the organizations' individual journalists are not included in this study, except in cases of retweeting via the organization's official Twitter account and mentions of the official Twitter handle. In the pre-automation period, these inputs were managed by employees in a role defined for this project as "social media manager." In the post-automation period (as seen in Figure 3.18), the news organizations' tweets were automated using three different technological approaches, as noted previously. Therefore, the inputs for the first two phases of the study comprised the individual tweets and associated metadata originating from each news organization's official Twitter stream.

### 3.4.1 Selection of pre- and post-automation periods

The study compares the prioritization of news items in each news organization's Twitter stream in two distinct time periods. Automated data collection began in mid-March 2015 for all three news organizations. It was important to select time periods during which the prioritization of news items for distribution via Twitter was accomplished using human judgment in the pre-automation time period, and through software in the post-automation time period. Of course, such operational transitions tend to occur over time in a single organization, and took place at the entities under investigation at different times, as well. Therefore, the selection of time periods was based on three factors: (1) the data available from NodeXL's automated collection, (2) the prevalence of indicators of automation in the underlying code, and (3) reported changes in employment at each news organization. In addition, to avoid some of the potential for confounding factors associated with analyzing Twitter data created during a presidential election, I selected a post-automation period that preceded the (most unusual) Twitter discourse in the

weeks leading up to the 2016 presidential election.

The first time period (pre-automation), is the duration from March 20, 2015 (the earliest date at which all three news organizations' Twitter data were collected consistently) through April 5, 2015. The second time period (post-automation), is the duration from September 15 through September 30, 2016. The selection of the post-automation period was driven by a desire to mitigate potential confounding effects of the presidential election and was deemed "post-automation" based on public statements by the news organizations and evidence of the use of algorithmic prioritization and distribution in the source code of the tweets in the datasets. Indicators of the use of software to automate the posting of news items to Twitter included the appearance of software-related terms (e.g., echobox, ebx.sh, hootsuite) in the tweet URLs (e.g., see Figure 3.18). Finally, I compared the time series graphs of each organization's tweets to identify times during which the number of tweets in each dataset increased and/or declined in only two of the three news organizations, figuring that further examination may be more fruitful when looking at inverse relationships. Figures 3.19 and 3.20 present the tweet count over time for each news organization during the pre-automation period from March 20 through April 5, 2015, and the post-automation period from September 15 through September 30, 2016.

Figure 3.18 Detecting Automation in Twitter Data
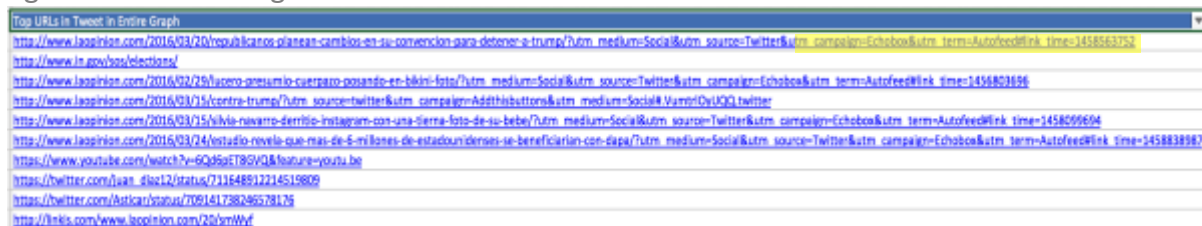
The highlighted portion of the URL indicates the news item is part of an Echobox campaign. Created by the author using NodeXL Pro.

Figure 3.19 Trends in Tweet Count over Time, Pre-Automation

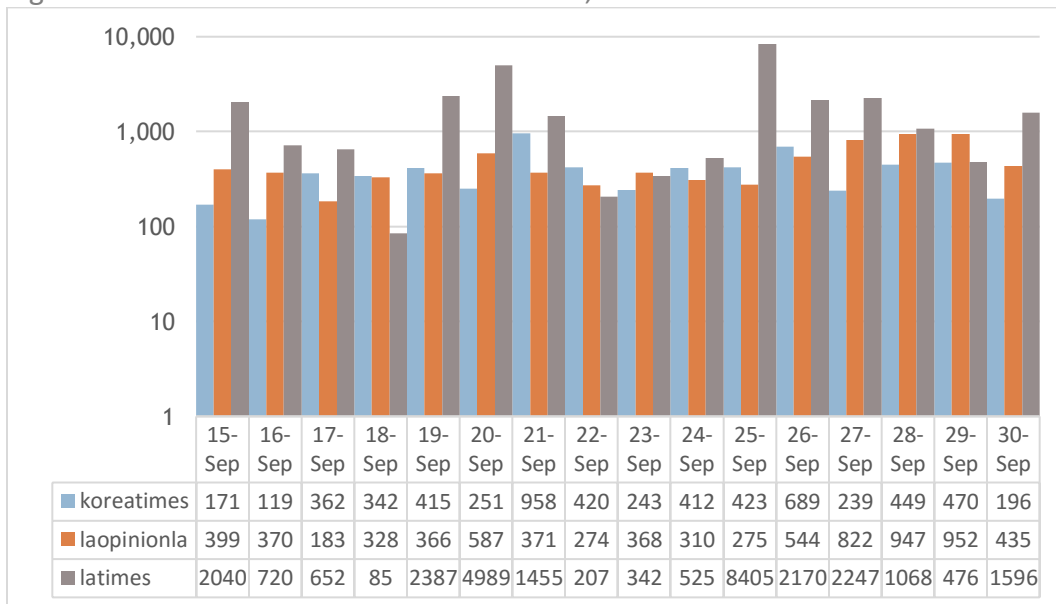|	20-Mar-15	21-Mar-15	22-Mar-15	23-Mar-15	24-Mar-15	25-Mar-15	26-Mar-15	27-Mar-15	28-Mar-15	29-Mar-15	30-Mar-15	31-Mar-15	01-Apr-15	02-Apr-15	03-Apr-15	04-Apr-15	05-Apr-15
koreatimes			1	31	3	3	3	5		4	1	8	1	7			7
laopinionla	516	275	193	166	170	388	354	416	479	304	212	340	281	350	440	554	315
latimes	4121	8415	6336	7425	7495	6598	8519	8536	4181	9272	17877	8353	7393	8045	7418	6303	10942
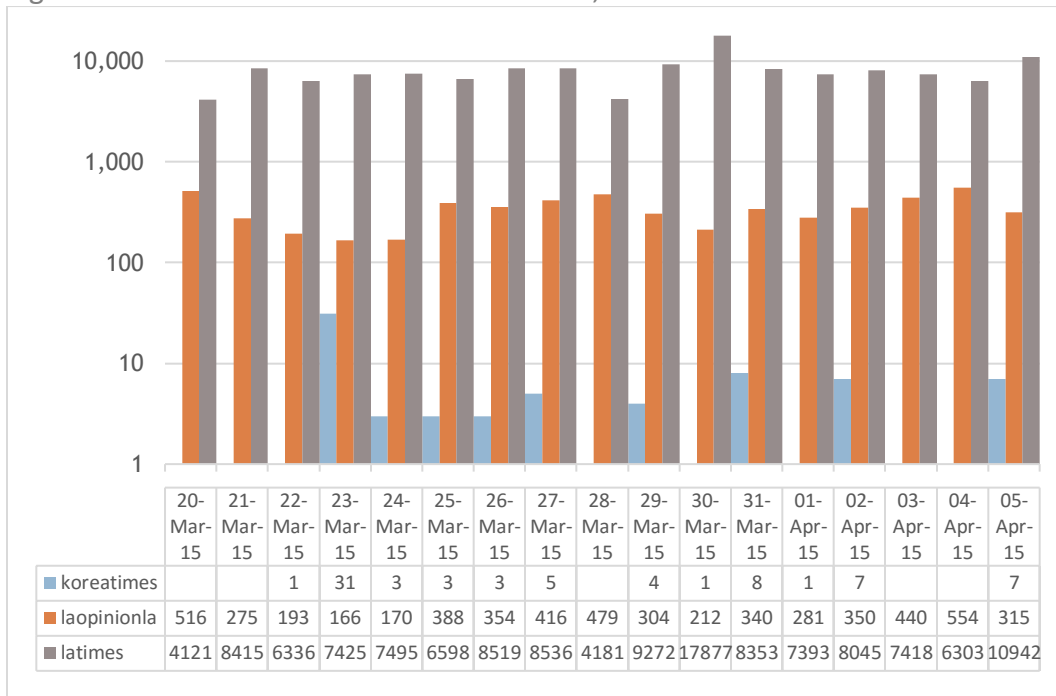
Count of tweets by news entity during the pre-automation period.

Figure 3.20 Trends in Tweet Count over Time, Post-Automation

	15-Sep	16-Sep	17-Sep	18-Sep	19-Sep	20-Sep	21-Sep	22-Sep	23-Sep	24-Sep	25-Sep	26-Sep	27-Sep	28-Sep	29-Sep	30-Sep
koreatimes	171	119	362	342	415	251	958	420	243	412	423	689	239	449	470	196
laopinionla	399	370	183	328	366	587	371	274	368	310	275	544	822	947	952	435
latimes	2040	720	652	85	2387	4989	1455	207	342	525	8405	2170	2247	1068	476	1596

Count of tweets by news entity during the post-automation period.

3.4.2 Pilot tests

The "handles" representing the Twitter streams for each of the news organizations are

116

presented in Table 3.2. Handles are the unique identifiers for entities contributing to the

Table 3.2 Twitter Handles of Three Los Angeles-Based News Organizations

News Organization	Twitter Handle
La Opinión	@laopinionla
The Korea Times	@koreatimes
The Los Angeles Times	@latimes

Twitter platform. The first exploration into using NodeXL Pro to capture Twitter data for the

three news organizations can be considered a pilot test. Once the Twitter handles for each

organization were identified, the data-capture process was initiated in NodeXL Pro. For each

Twitter stream, the program captured up to 18,000 tweets emanating from the organization's

official Twitter handle, along with several metadata values. Tweets over a period of one month

were collected to help determine whether the study design enables the collection of a critical

mass of data for network analysis. During the pilot test, the official Twitter handle for *The Korea*

Times in English changed from @koreatimes1 to @thekortimes, and then changed again to

@koreatimes. These changes prevented the collection of a complete dataset for that organization

during the one-month time period. Therefore, a second pilot test was conducted. Fortunately,

both pilot tests revealed that the three news organizations appear to post tweets to the Twitter

platform at least once a day, and more often several times a day.

3.4.3 Data collection procedure

This section delineates the procedure followed to collect the six datasets. There are many

options available to researchers analyzing social networks with NodeXL Pro. Each option I

selected is explained with respect to how it contributed to the likelihood of discovering evidence

of cultural time orientation. The procedure depicted in Figure 3.21 was conducted six times—

once for each news organization dataset during each time period. Data collection of this sort is

time consuming because Twitter imposes limits on calls to its API, and because multiple

processors are needed to power the calculations required to render visualizations of large Twitter

networks. I contacted the Social Media Research Foundation (SMRF), which is the organization

that developed NodeXL Pro. SMRF's director, Marc Smith, arranged for the periodic collection

and storage on a server of tweets for each news organization, which I could access remotely.

However, since NodeXL Pro runs on Windows (not Mac OS), I had to connect to SMRF's server

from a VPN connection to UCLA's Institute for Digital Research and Education (IDRE)

computers using Microsoft Remote Desktop. This layer of complexity made data calculations

and rendering extraordinarily time consuming. It would be disingenuous to present the data

collection procedure without acknowledgement of the significant technical challenges that were

sources of continual procedural refinement over the research period.

The latimes pre-automation dataset is considerably larger than the other five datasets

because I conducted a marathon series of data imports from the Twitter API in an initial effort to

collect a full month's worth of tweets. This enabled the collection of a greater proportion of the

Twitter firehose than one can import normally, but also strained the resources of the server. For

this reason, I did not attempt to collect multiple imports for the other five datasets. Figure 3.21

provides a top-level view of the data collection and visualization elements of the research design,

while Figure 3.22 depicts the specific procedure for data collection, social network visualization,

and informetric network visualization using NodeXL Pro.

Figure 3.21 Data Collection and Visualization, Top-Line View

Figure 3.22 Procedure for Data Collection and Visualization with NodeXL Pro

1	Import data.
2	Clean the data. Import missing tweets. De-duplicate and merge.
3	Calculate graph metrics to represent the size and internal connectivity of the network as a whole, & attributes of each node: in- & out-degree; clustering coefficient; betweenness, closeness, & eigenvector centrality.
4	Create clusters. NodeXL's clustering algorithms do the heavy lifting, and then each cluster can can be assigned display attributes with a distinctive shape, color, size, transparency, or image.
5	Create sub-graph images. Subgraph images represent a local network centered on each node one at a time and include first-degree connections. (Optional, but useful for identifying sub-group influences.)
6	Prepare edge lists. Nodes and edges have attributes that can be used to order the data.
7	Expand worksheet with graphing attributes. Columns can be auto-filled to map data to display attributes.
8	Show graph and adjust layout. For this study, a force-directed Harel-Koren layout was applied to generate a visualization that clusters tightly connected nodes near one another.
9	Apply dynamic filters to generate the most useful display of nodes and edges for analysis.
10	Finally, once an optimal network layout has been created to highlight the meaningful features of the network, redraw the graph.
11	Run Paths function.
12	Open new instance of NodeXL Pro.
13	Import Paths worksheet using Import from Open Workbook.
14	Expand worksheet with graphing attributes; set x-axis to Generation 1 and y-axis to Path Sequence 1.
15	Show graph with layout set to None.

Automated collection of tweets for this study began in mid-March 2015. The data was held in a database on the NodeXL graph server, from which I imported the Twitter data for each news organization using the NodeXL Graph Server Importer. At the same time, I worked with NodeXL's developers to create a new feature, called Paths, to present the data in a way that would expose persistent tweets in social networks. As development of the Paths feature progressed, new versions of the open-source software extension were released, and I upgraded and re-imported the datasets each time for two reasons: (1) to ensure data accuracy, and (2) to figure out ways that the software could represent the Twitter data visually to reveal temporal relationships.

After importing from the graph server, I set out to create a visualization of each network. NodeXL automatically creates a multiplex weighted network matrix of a dataset, but presents the data in the form of various Excel worksheets, namely Edges, Verticies, Groups, Group Verticies, and Overall Metrics. Network matrixes are powerful by virtue of their mathematical efficiency, but for large datasets, they can be difficult to navigate. By partitioning the data, NodeXL's worksheets make it easier to navigate and make sense of how different attributes relate to network nodes and structures. To populate the cells of the worksheet consistently across datasets, I followed a specific set of steps, in order, for each dataset.

Import from NodeXL GraphServer. The NodeXL Graph Server Importer must be downloaded from the SMRF website, and installed on the local machine. It enables the import and storage of data from a variety of social media networking sites, including Twitter and Facebook. For specific guidance, visit: https://graphserverimporter.codeplex.com/. Once data is imported into NodeXL Pro, several options must be configured to create visualizations that enable meaningful interpretation. A description of the options used for all NodeXL Pro visualizations in this study appears in the Appendix. For researchers wishing to replicate this study, a NodeXL Pro options file is available at http://dianaascher.com/new-yellow-journalism/nodexl-options.

Prepare Data. I next ran two scripts accessed through the Prepare Data selection. First, I ran the Find and Import Missing Tweets script. This new feature arose from my discovery that some waypoint tweets were not collected in the original import. Selecting this option conducts a second pass through the data residing in the graph server to retrieve messages that may not have been included in the initial import. Importantly, this function adds older tweets referenced by tweets in the imported dataset, often the elusive original tweets that become popular as they are

redistributed through networks over time. Second, I ran the De-duplicate and Merge Edges script. Merging duplicate edges adds an Edge Weight column to the Edges worksheet, which is useful for representing the frequency of tweets visually.

Cluster People in Communities. After running the scripts to prepare the data, I grouped each dataset by cluster. Clusters are "pockets of densely connected verticies that are only sparsely connected to other pockets" (Hansen et al., 2011). NodeXL offers a few algorithms for clustering, including Clauset-Newman-Moore, Wakita-Tsurumi, and Newman-Girvan. The Clauset-Newman-Moore (CNM) clustering algorithm is one of the most rapid methods for detecting community structure within a network (Clauset et al., 2004). It uses an hierarchical agglomeration routine to optimize the modularity of the network, making it possible to analyze large datasets that had been fairly impenetrable to researchers previously. Unfortunately, the CNM algorithm was unable to handle the largest datasets in the present study, those of the latimes networks. However, CNM worked well for clustering the four smaller datasets. The Newman-Girvan algorithm focuses on the edges between vertexes, systematically removing edges to reveal network clusters; it is appropriate for small networks, and was not used in this research. The Wakita-Tsurumi algorithm was able to cluster the people in the large latimes networks. The algorithm applies simple heuristics to merge community structures in a way that is more evenly balanced than the Clauset-Newman-Moore algorithm, but its output is less aesthetically pleasing. [possibly you could use the W-T clustering on all 6 datasets to make the cluster method consistent?] Most clustering algorithms in data visualization software today assign each vertex to a single group based on edge connections. This limitation makes it difficult to represent nodes that belong to multiple groups. However, for the purposes of the present study, connections among nodes in the initial person-to-person visualizations represent tweets

(mention, reply, tweet, retweet, and quote), so clustering based on edge attributes is appropriate. For the informetric Paths visualization, which displays tweets as social objects transmitted over generations, clustering was unnecessary.

Calculate Graph Metrics. From the NodeXL Pro tab in the Analysis section, I next configured settings to calculate a series of metrics that describe the network structure and the relationships among nodes in the network. I set options for each configurable process; importantly, I added latimes, laopinionla, and koreatimes to the Skip Words list to provide a clearer picture of the content of each group in the Top Words rankings. I also modified the existing positive and negative word lists and added a temporal word list; all three lists appear in the Appendix. To reduce the computing power required to render the visualization of each data set, I ran the graph metrics functions in four parts, saving the file after each set of functions was completed. First, I ran the centrality metrics, then the Time Series function, then the Paths function, and, finally, the set of sentiment and top values functions.

Once the network metrics were calculated and inserted into the worksheets, I added a column to the Edges worksheet to enable control over edge visibility. I called this column Self-Loop, and used a formula to indicate whether a node has an edge connecting it to itself: =IF([@[Vertex 1]]=[@[Vertex 2]],1,0). These self-loop edges can clutter the graph, making it more difficult to see ties that may reveal unexpected connections among multiple nodes. I used the Autofill Columns feature to skip self-loop edges in the graph and to customize the visual display of various attributes. For example, I set the edge thickness to the value of the edge weight column in the Edges worksheet. An options file with the configuration used for all visualizations in this study is available at http://dianaascher.com/new-yellow-journalism/nodexl-options.

Render Graph. In the graph pane, I selected the Harel-Koren Fast Multiplex layout to initiate the rendering process. For larger datasets, rendering the graph can take several hours. Figure 3.23 depicts a graph of the laopinionla pre-automation network.

Figure 3.23 laopinionla Pre-Automation Network
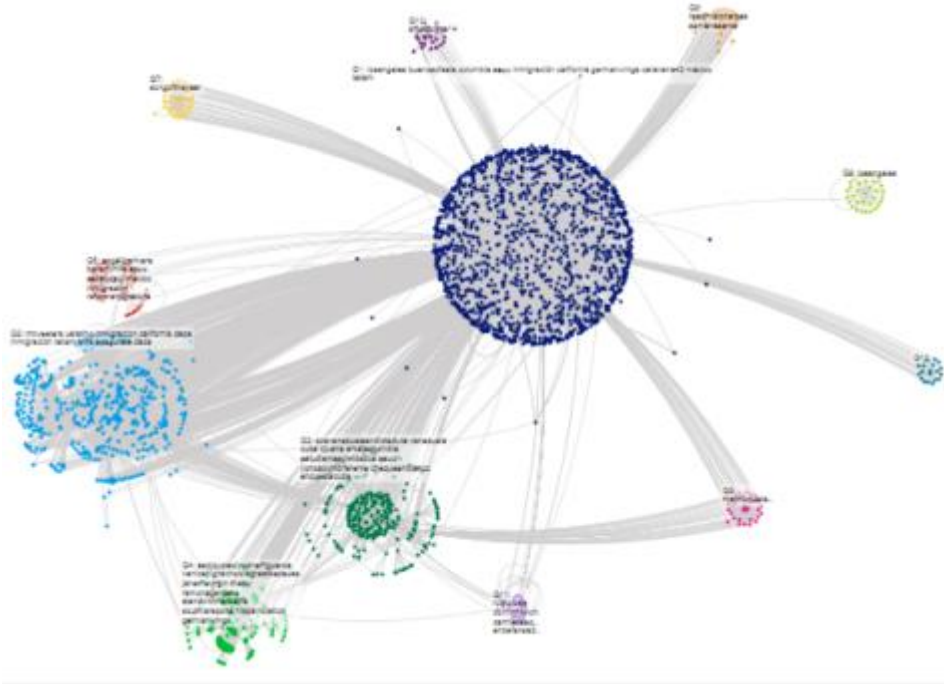
Created by the author using NodeXL Pro.

Convert to Tweet-Tweet Network. Once the social media network was rendered, focus shifted to the conversion of the network from a person-to-person relationship visualization to a tweet-to-tweet bipartite graph. Using the new Paths feature, I imported the converted data into a new NodeXL instance for each news organization to investigate the relationships among the tweets themselves, rather than among the individuals in the social network. Figure 3.24 shows the paths visualization for laopinionla during the post-automation period.

Figure 3.24 Iaopinionla Temporal Paths, Post-Automation
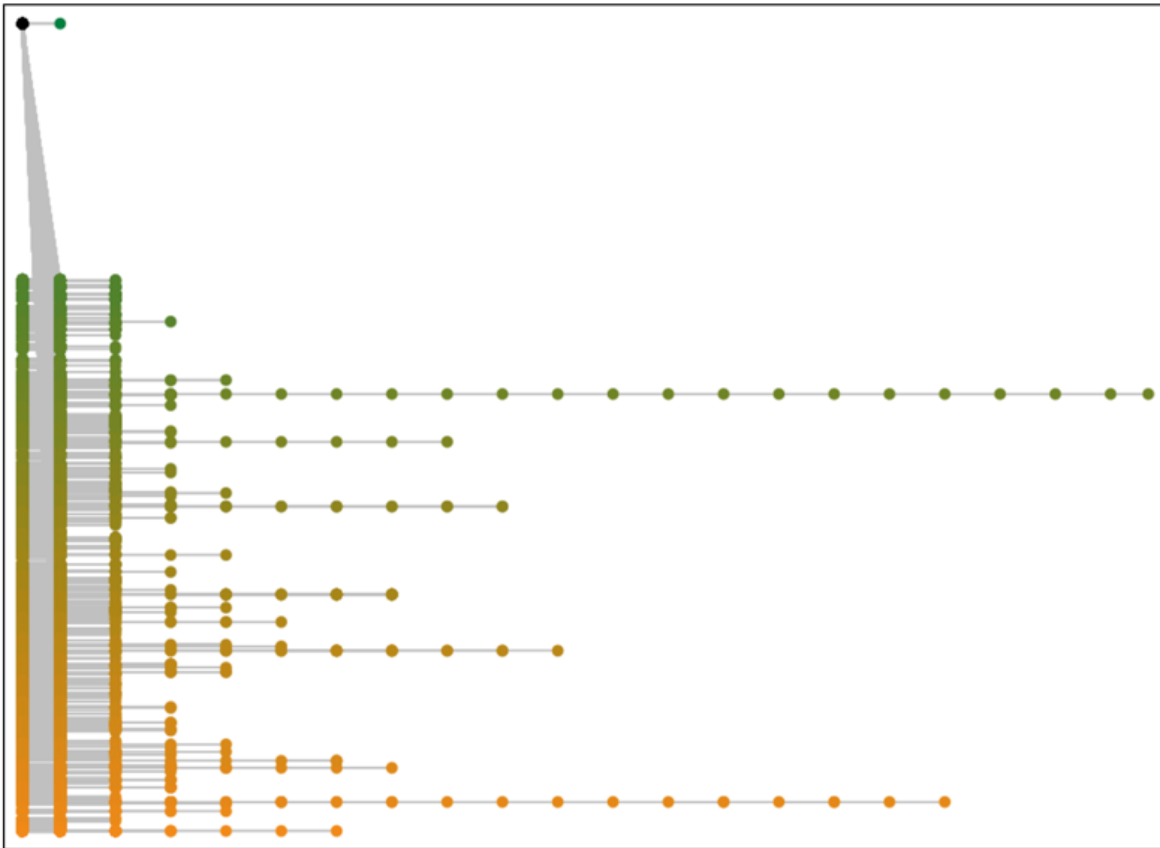
3.4.3.1 Technical hurdles

Compared to the traditional social network analysis, the informetric network analysis was a much more challenging beast. Converting the person-to-person networks to produce the bipartite graphs necessary for tracing the paths of tweets through each news organization's network was a significant hurdle that became a two-year software-development project beyond the scope of this study.

3.5 Data Analysis Techniques

Three types of analysis were used to explore the data collected for each news organization: social network analysis, informetric network analysis, and interpretive analysis.

The output of each phase served as the input for the next, for each of the three news organizations, as shown in Figure 3.25. The visualizations and network metrics deriving from the six datasets were considered independently to facilitate a description of each network's attributes. Subsequently, the networks from the pre- and post-automation periods for each organization were compared and contrasted.

Figure 3.25 Data Analysis Process
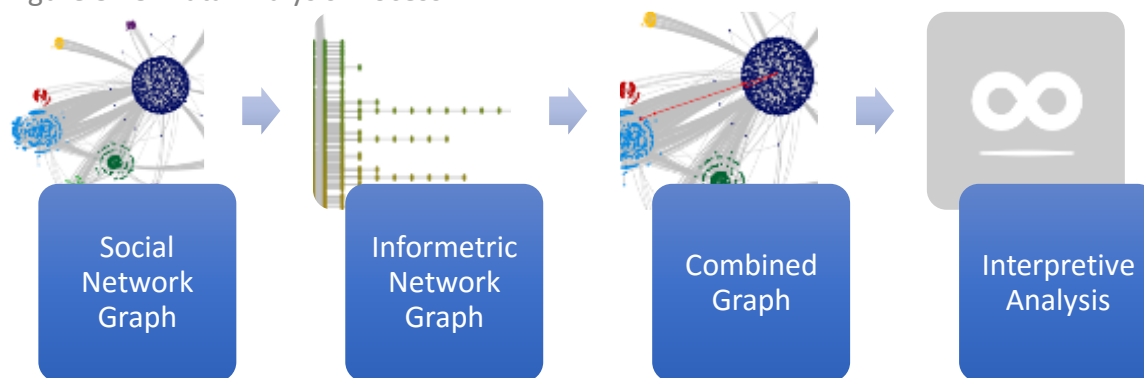
A novel combination of methods and analysis.

3.5.1 Critical incident technique and network analysis

Using a novel form of the critical incident technique, I selected critical incident tweets (CITs) by finding the most enduring, or persistent, paths in each network. Two different data visualizations were used to (1) identify critical incidents by revealing the persistent paths in each network, and (2) explore any temporal anomalies related to the structural relationships among the nodes in these persistent paths, based on the topological findings of the social network analysis. This approach was thought most likely to encounter evidence of cultural time orientation, because network structure can affect the rate of information flow, and messages that persist over time entail greater commitment and investment of time and attention than short-lived, yet popular, tweets.

The novelty arises from the use of network visualization to identify critical incidents.

Critical incidents are records of real events that become the focus of in-depth qualitative

research. Importantly, they are events that resulted in documented outcomes, which can be

evaluated in the context of insights gleaned from research in the scholarly and popular literature,

discussions with industry experts, and participation in industry events. Flanagan (1954)

delineates five steps in the critical incident technique, which are shown in Figure 3.26.

Figure 3.26 Flanagan's Critical Incident Technique
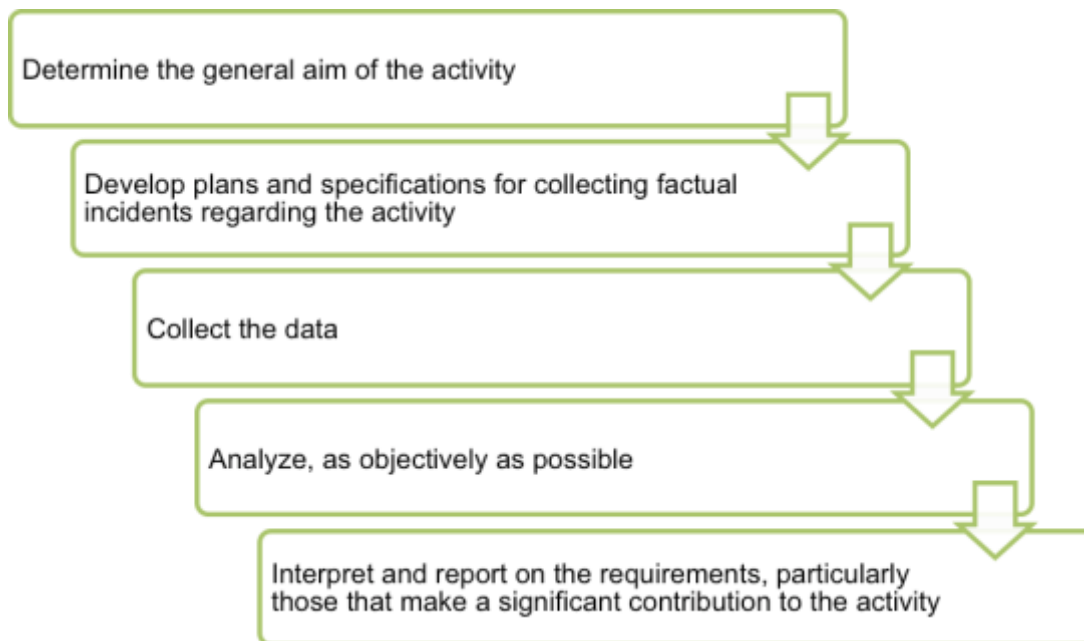
Adapted from Urquhart et al., 2003, pp. 64-65.

Strengths of the critical incident technique for identifying catalyzing topics include its

relatively low cost, capacity to capture rich and detailed data, flexibility and usability with a

range of data types, and applicability in diverse social contexts. The technique is not as useful for

capturing routine task information, and the criteria for identifying critical incidents can

sometimes be ambiguous. For the purposes of the present study, the method provides a useful

tool for spotting key events in the social media data and prompting interpretive reflection on the

factors influencing the diffusion of tweets through the networks.

Typically, the critical incident technique is used to identify topics to serve as the basis for

interviews with study participants to elicit detailed descriptive recollections. However, interviews are not required to put the critical incident technique to good use in qualitative research. In the present study, I used two types of network visualization to reveal topics that served as catalysts for enduring engagement within each news organization's Twitter network. First, I examined the person-to-person social network visualizations for each news organization; next, I studied the tweet-to-tweet network graph for each entity to identify tweets that persisted over time through multiple generations of distribution. Both types of graph were rendered and evaluated before and after the three news organizations transitioned to automated evaluation, prioritization, and distribution of news items via Twitter.

I selected Critical Incident Tweets (CITs) on the basis of their persistence over time. Cultural persistence, in the context of the natural experiment that presented itself during the course of my research, is measured by the number of times a tweet is redistributed through user action that requires more than two mouse clicks. The present study is unique in this requirement; other recent studies of Twitter activity measure the number of times a tweet is retweeted—which takes only two mouse clicks—to assess its exposure, or reach (e.g., Cheng et al., 2014; Goel et al., 2012; Weng et al., 2014). In the present study, each iteration of the tweet is considered a generation, providing a useful metaphor for conceptualizing the journey that a culturally persistent tweet makes through a network over time. Thus, critical incidents were chosen on the basis of their relative generational length as shown in the informetric network graphs of each dataset.

3.5.2 Social network analysis

A common approach in sociology, social network analysis has become the prevailing type of analysis used to describe the dynamics of social media networks. However, I am less

interested in the relationships among the people participating in the discourse on trending topics than I am in features of the network and aspects of information practice that influence the paths of news items as they flow through each network over time. In these networks, the nodes represent people. People are connected by Twitter actions (retweets, quoting retweets, mentions, and replies), represented as edges. Since NodeXL Pro was designed to render visualizations for this type of analysis, the data challenges for this part of the study were constrained to my own learning curve for the NodeXL Pro software and gaining access to computing power that could handle the large amount of data and processing required to render the network visualizations.

In addition to the visualization of the networks, NodeXL Pro provides a number of metrics for use in data analysis. I used these metrics to conceptualize the dynamics of the network in terms of centrality, density, modularity, isolate ratio, and temporal salience. For example, I used NodeXL's automated content analysis to give each CIT a temporal salience score, which indicates what proportion of the terms in the CIT are time-related. (A list of the terms used to assess temporal salience is available in the Appendix and online at http://dianaascher.com/new-yellow-journalism/nodexl-options.) Similarly, the density of connections among network nodes, when assessed with the knowledge of whether the nodes are similar or dissimilar in terms of understanding, identity, and/or beliefs, can provide insight as to the types of information exchanged and the rate of information flow through the network (Himelboim et al., 2017, p. 3). In combination with density, modularity—a measure of the interconnections among the clusters of a network—can help distinguish between unified and divided network structures, which has implications for information flow. For example, a high-density network with high modularity will exhibit a divided structure; the same network with low modularity will produce a unified community.

3.5.3 Informetric network analysis

To examine the relationships among the tweets in each network, I employed methods derived from informetric research in information studies, focusing on tweets as social objects, rather than the intents and motivations of individuals in a social network. This structuralist approach also has been used in research on organizational information flow over time (e.g., Borgatti et al., 2013; Tichy et al., 1979). In this conceptualization, tweets can be thought of as social objects, and their diffusion throughout the Twitter network may help us understand something about the values and priorities of particular cultural groups. "These networks have both academic and practical value, they offer detailed data about previously ill-defined and elusive social processes and they can be leveraged to highlight features about location, content and the content creators and consumers" (Thomas & Bellafiore, 2014, p. xx).

The structure of the interrelationships among the tweets themselves can provide insights into the components of the information context that affect the course of tweets that persist over time. Himelboim et al. (2017) describe six structures of information flow: divided, unified, fragmented, clustered, in-hub-and-spoke, and out-hub-and-spoke networks. These informed the network analysis by providing an initial set of classification examples, based on their network-level structures. This approach classifies Twitter conversation based on patterns of information flow as measured by the centrality, density, modularity, and isolate ratio of the network. Figure 3.27 provides an overview of the six types of Twitter social media network structure resulting from this classification and the implications of each classification for information flow.
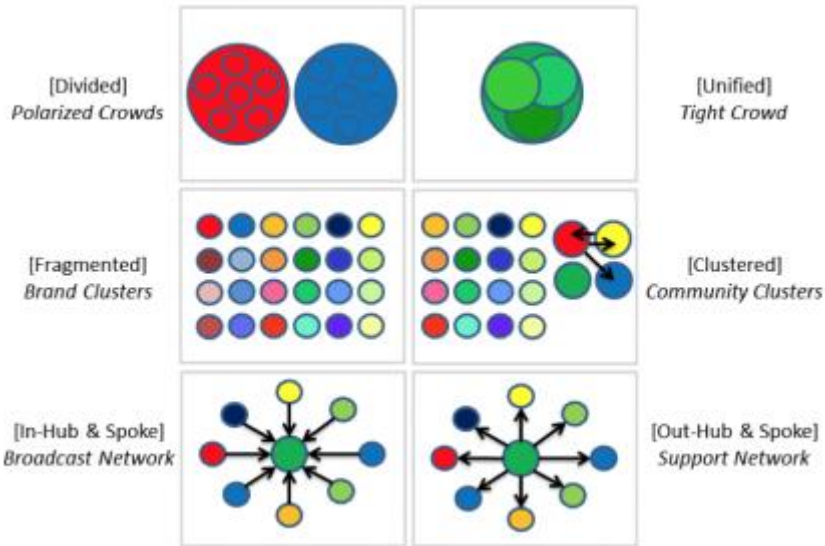
Figure 3.27 Information Flow and Network Structures
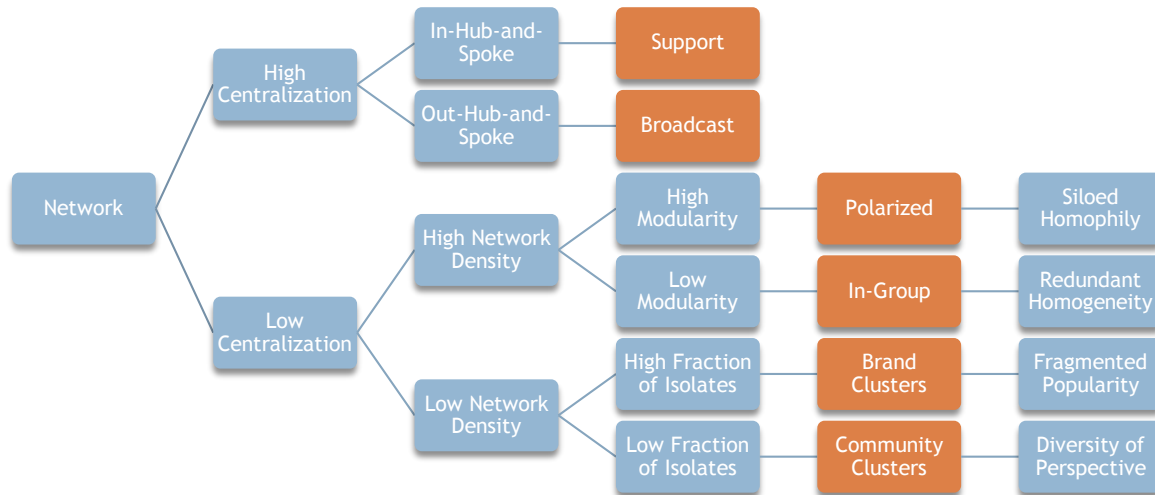
This classification schema is very similar to the six conversation types identified by Smith et al. (2014), as seen in Figure 3.28. The interpretation of how information flows through such structures is called the logical topology of the network, and is related to—but may differ from—its physical topology. Figure 3.29 describes how power is distributed through different types of networks, comparing centralized, decentralized, and distributed topological examples.

Figure 3.28 Smith et al.'s Network Structures

Figure 3.29 Topology of Networks with Various Types of Power Centralization
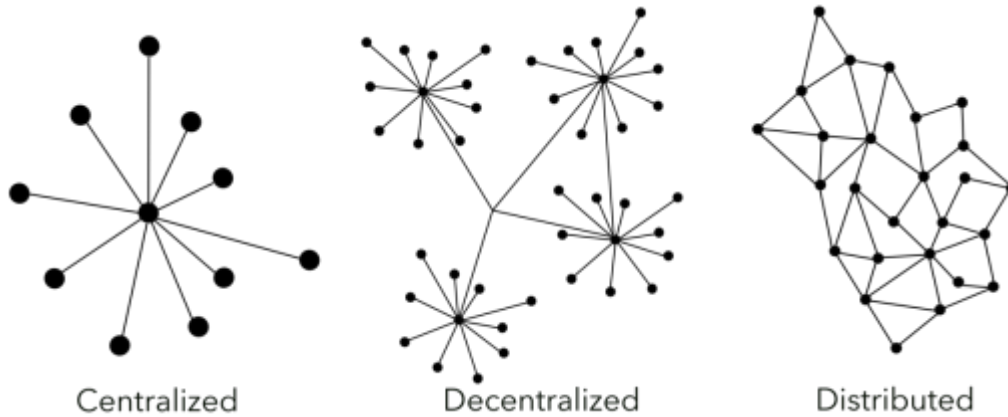
Researchers in a variety of fields use these relationship classifications to study and describe information flow. For example, such topological structures are being explored in neurology to help researchers understand how information travels between gray and white matter in the brain, as shown in Figure 3.30.

131

Figure 3.30 Topological Network Structures in Neurological Research
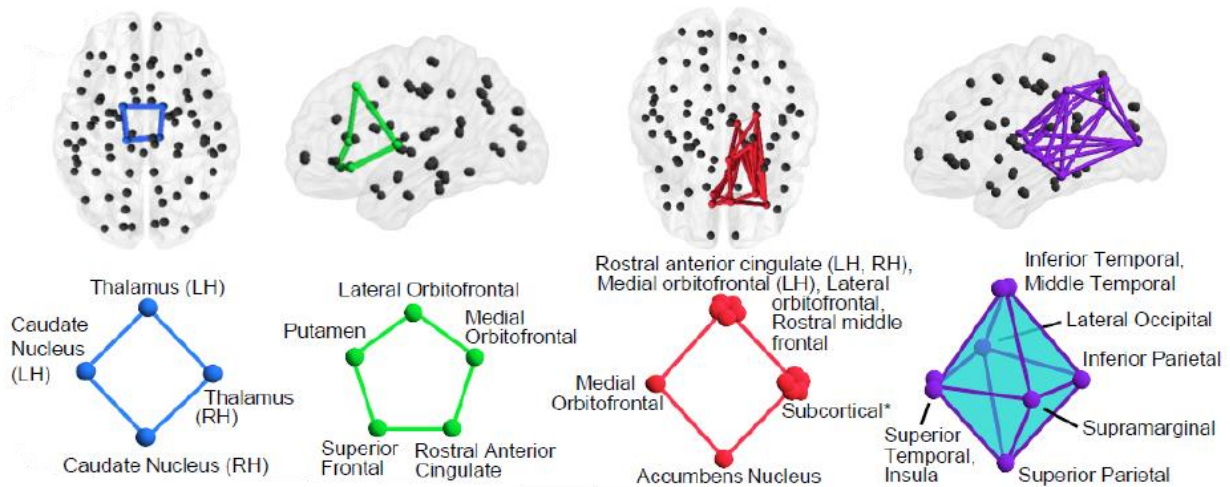
Example of the use of topological network structures in neurological research. Source: Sizemore et al., 2016, p. 7. Reprinted with permission.

All of these classification schemas draw from network science, in which several basic network relationship types are categorized according to their physical topography, and then analyzed in terms of how data moves through the network; this analysis is called logical topography. The topology of a network is the arrangement of its nodes, disregarding the distances between them. Eight types of network topologies are depicted in Figure 3.31, along with descriptions of their influence on information flow.

Not only does the informetric analysis provide researchers with a means of identifying the most persistent tweets in a network, but it also enables the tracing of a tweet's path through the social network graph. The benefits of this process include the ability to infer key aspects of information flow through analysis of the CIT's topology, drawing from new findings in many different fields.

Figure 3.31 Network Typologies

Column1	Point-to-Point	Line	Bus	Star	Ring	Mesh	Tree	Hybrid
Structure								
Description	Two nodes connected by an edge	Several nodes connected sequentially with an edge between each pair and two terminal nodes	Several nodes, each with a direct connection to a single edge; multiple terminal nodes (reduce reflection); unidirectional	Several nodes, each connected point-to-point to a central node; all traffic flows through the central node, which acts as a signal repeater	Several nodes, each connected to exactly two other nodes in the network; unidirectional, unless using a dual-ring topology	Partial: Several nodes, each connected to at least one other node in the network; Full: Several nodes, all connected to each other; messages may travel any of several possible paths from source to destination	Hierarchical combination of bus and star typologies;	Combination of two or more different network topologies, with the features and limitations of its components
Example(s)	Conventional telephony; electronic currency; reporter interviews individual	Gossip	Aqueduct system	Radio station	Campus computer network	The internet	Cable television	Press release distribution
Advantages	Easy and inexpensive to create; unimpeded connection	Easy to create	Easy and inexpensive to create; signals travel in both directions to reach intended recipient	Easy to create, expand, and troubleshoot	Entire network receives the same information; inexpensive to create and expand; no coordinating node	Partial: Some signal redundancy without expense and complexity of full interconnection; Full: Reliable signal transmission and receipt ; Easy troubleshooting; Provides security and privacy	Easy to expand (scalable); point-to-point connection; easy troubleshooting	Flexible and reliable, with increased fault tolerance
Disadvantages	Small size of the network limits its capacity	Expensive to create; unidirectionality; slow and prone to interruption (especially due to terminal reflection)	Signals can only travel in one direction at a time, which may create congestion, slowing the rate at which information travels; limited by the capacity of the central edge	Expensive to create; failure of central node affects all nodes; limited by the capacity of the central node	A single failure disables the entire network; difficult troubleshooting	Difficult and expensive to create and manage	Limited by the capacity of the central edge of the bus component and the central node of the star componenet; maintenance can be costly at larger scales	Expensive and difficult to manage

Created by the author.

    I also compared the hashtag(s) and/or general topic(s) of each CIT to the trending topics reported by Twitter for the relevant time period and geographic region. "Twitter Trends are automatically generated by an algorithm that attempts to identify topics that are being talked about more *right now* than they were previously" (Twitter, 2010). Twitter claims that its trending topics are "the hottest emerging topics, not just what's most popular," but gives no insight into how these terms are defined. It is instructive to consider all of the alternatives each news organization had at the time during which prioritization and distribution of CITs took place. Therefore, comparing Twitter trending topics to the topics of CITs may help detect temporal

patterns. To explore this in a bit more depth, I also compared the CIT topics in each network to the news articles published by each organization in their flagship printed and online newspapers.

3.5.4 Interpretive analysis

A strong emphasis on understanding through firsthand experience requires data gathering methods that are sensitive to context and flexible to elicit thick description from research participants. Due to changing business models resulting from upheaval in the news industry during the study, the human subjects who were to be the focus of semi-structured interviews approved by the IRB were no longer available, and algorithmic news prioritization and distribution practices were instituted in each organization. However, through extensive research of the literature, participation in industry events and discourse, and drawing on my own experience as a journalist and technologist, I persisted in the use of a modified critical incident technique to explore topics of high engagement in the social media networks of the three news organizations, in keeping with the interpretivist paradigm. "Interpretive research can help IS researchers to understand human thought and action in social and organizational contexts" (Klein & Myers, 1999, p. 67). Both social and organizational contexts are relevant in the present research.

With the seven principles of interpretive field research in mind—hermeneutic circle, contextualization, interaction, abstraction and generalization, dialogical reasoning, multiple interpretations, and suspicion (Klein & Myers, 1999)—I used the TAFIP to surface and consider contextual influences during each phase of a news item's existence. Shifting iteratively from a holistic perspective to a focus on specific aspects of each news item, narratives emerged, which help explain some of the information practices and expectations for prioritization observed in each of the six tweet networks. The next chapter provides an overview of the study's findings;

the emergent narratives follow in the form of case studies in Chapters 5, 6, and 7.
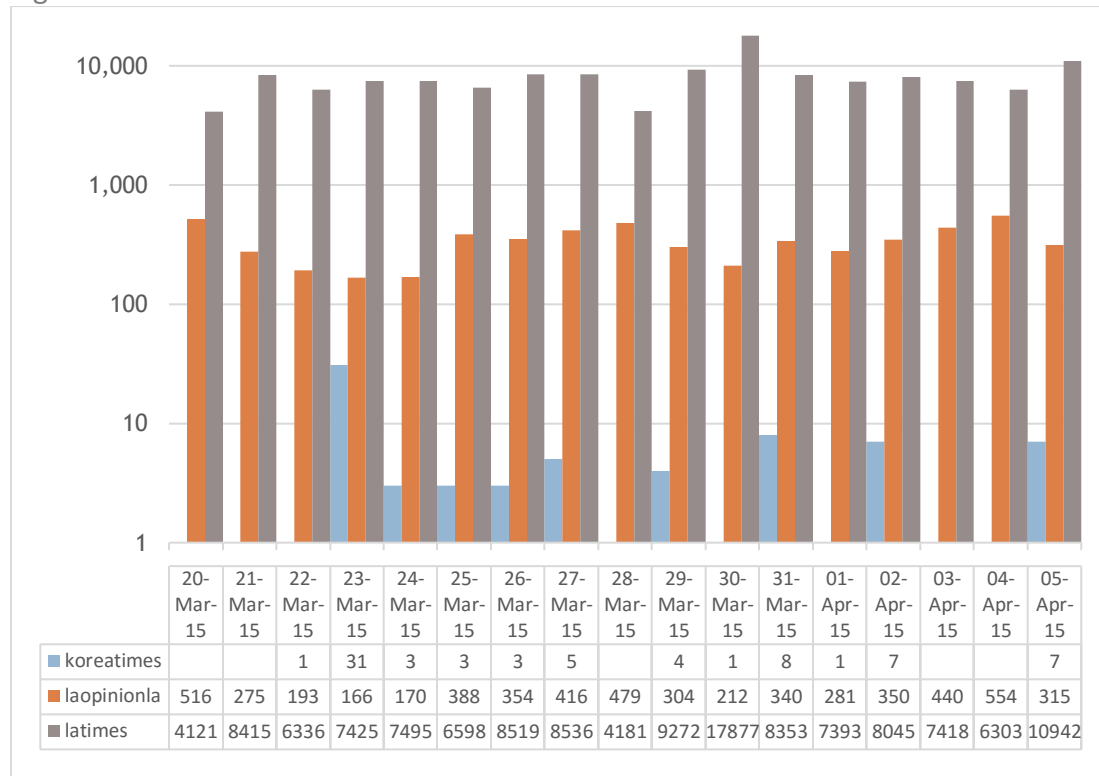
Chapter 4: Findings

In order to contemplate the underlying aspects of the information context that often are

disregarded, I used each phase of the TAFIP to consider the critical incident tweets for each

news organization's Twitter network in the periods before and after automation. TAFIP was used

to examine each social network graph for insights into the topics that catalyzed action on the part

of network members, as well as for structural features that may serve as indicators of cultural

time orientation. This brief chapter presents an overview of the findings of the study, as

foreground to three in-depth case studies of the CITs identified in each Twitter network, both

before and after the news organizations implemented automated social media solutions.

4.1 Pre-Automation Synopsis

This section provides a synopsis of findings from the social and informetric analyses for

each of the three news entities in the pre-automation period (March 20, 2015, through April 5,

2015). Figure 4.1 is a snapshot of relative tweet frequency for each news entity during the pre-

automation period. The chart demonstrates the relative inactivity in the koreatimes network, as

compared to the laopinionla and latimes networks, as well as the relative sizes of the networks.

The latimes network is 24 times larger than the koreatimes network, and 4.5 times the size of the

laopinionla network.

Figure 4.1 Pre-Automation Tweets

	20-Mar-15	21-Mar-15	22-Mar-15	23-Mar-15	24-Mar-15	25-Mar-15	26-Mar-15	27-Mar-15	28-Mar-15	29-Mar-15	30-Mar-15	31-Mar-15	01-Apr-15	02-Apr-15	03-Apr-15	04-Apr-15	05-Apr-15
▪ koreatimes			1	31	3	3	3	5		4	1	8	1	7			7
▪ laopinionla	516	275	193	166	170	388	354	416	479	304	212	340	281	350	440	554	315
▪ latimes	4121	8415	6336	7425	7495	6598	8519	8536	4181	9272	17877	8353	7393	8045	7418	6303	10942

Created by the author. Count of tweets by news entity during the pre-automation period.

4.1.1 Pre-automation social network analyses

Figure 4.2 presents a side-by-side comparison of the three pre-automation social network graphs, which accentuates their relative scale. Network metrics generated by NodeXL Pro may be used to describe likely attributes of the network (Hansen et al., 2014; Himelboim et al., 2017). All three person-to-person pre-automation networks are centered on a (relatively) large community cluster containing the node representing the news organization under study. This central cluster is surrounded in each case by a number of satellite clusters, with few interconnections. Apart from the obvious differences in scale, the relative in- and out-degree ratios of the central nodes are particularly interesting, because they reflect the types of engagement practiced by the news organization.

Figure 4.2 Social Network Graphs, Pre-Automation

Social network graphs of the person-to-person networks for koreatimes, laopinionla, and latimes, respectively, during the pre-automation period (March 20 through April 5, 2015). Created by the author using NodeXL Pro.

4.1.2 Pre-automation informetric network analyses

Once I had rendered a social network graph for each news entity during the pre-automation period, I initiated the Paths feature in NodeXL Pro to create a visualization of the most enduring tweets in each network, as described in Chapter 3. The conversion enabled by the Paths feature facilitates analysis of both the people-to-people social network graphs and the tweet-to-tweet informetric network graphs for each news organization. In essence, the conversion uses the new Paths feature in NodeXL Pro to display the most persistent tweets in the network. I selected CITs by finding the longest paths in each network. I then considered the CITs using the TAFIP to focus my analysis on the temporal factors that may have influenced both the initial decision to share the tweet and subsequent decisions related to its redistribution.

Figure 4.3 displays graphs of each of the informetric networks during the pre-automation period, with generation on the horizontal axis, and tweet path on the vertical axis. This graph format enables identification of the most persistent tweet paths in each network. The longest

Figure 4.3 Informetric Network Paths Visualizations, Pre-Automation

Pre-automation paths graphs showing tweet persistence over generations for koreatimes, laopinionla, and latimes, respectively. Created by the author using NodeXL Pro.

paths in each network are selected as critical incident tweets to be used in the subsequent

analyses. For example, the koreatimes informetric network graph for the pre-automation period

shows three vertexes connected by two sequential versions of a tweet. The original tweet,

emanating from the central vertex of the largest graph cluster, is redistributed by two additional

network members. The Paths feature makes it possible for researchers to identify tweets that

persist over time much more easily than the typical social network graph. Therefore, I used the

informetric network graphs of each dataset to select the CITs for analysis. In most cases, I also

employed a second selection criterion—representativeness— to identify additional CITs for

analysis. For example, the most persistent tweet in the latimes pre-automation network is an

extreme case, which may be considered an outlier. In addition to this CIT, I selected two other

tweets that were relatively persistent, yet more representative of the majority of tweets in the

network. All of the selected CITs are depicted in Table 4.1.

Table 4.1 Critical Incident Tweets

Pre-Automation	Post-Automation
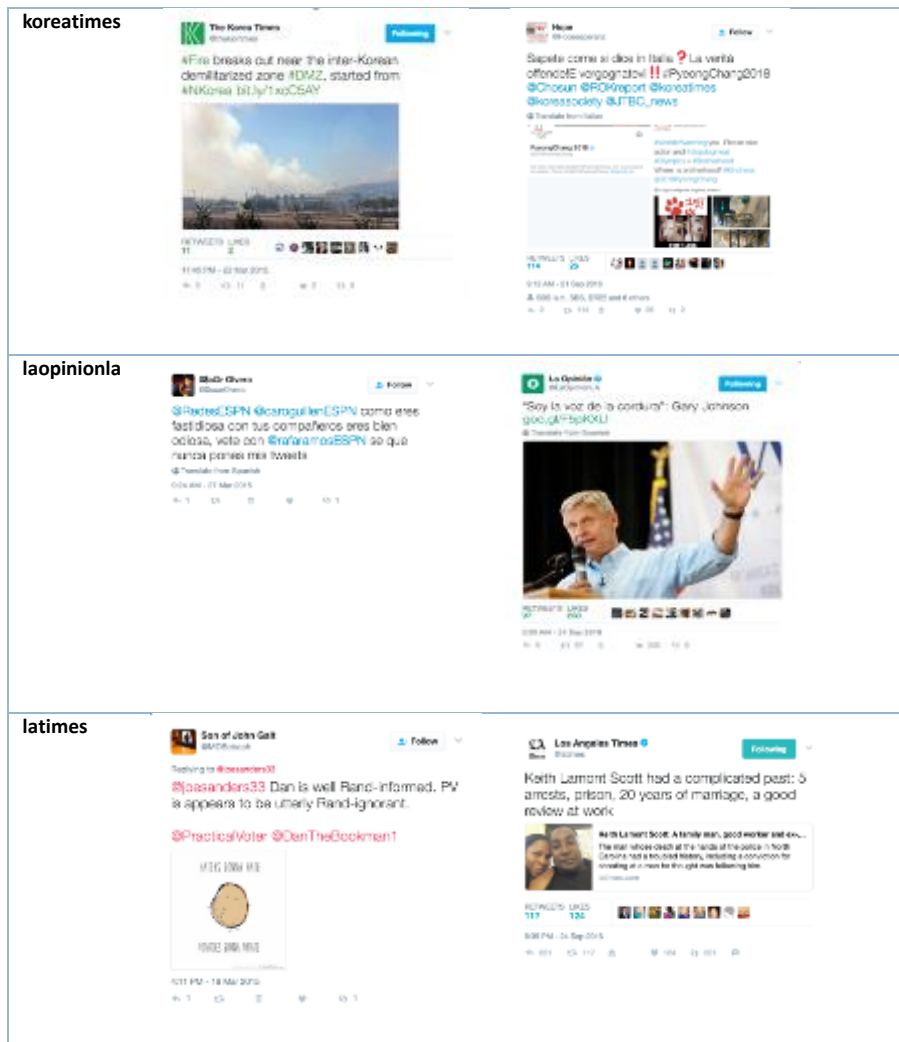
Source: Twitter.

The most persistent tweets in the pre-automation period concern topics that are more serious than most of the topics trending on Twitter in the Los Angeles region at the same time. For example, the breaking news of a fire in the Korean demilitarized zone has public safety implications beyond the immediate danger of a conflagration; mounting concern over missile and nuclear weapons testing by North Korea underscores the CIT, and in 2015 this concern may have been on the minds of Korean-Americans and Koreans living in Los Angeles more than people without ties to Korea.

Discussions that persist through multiple tweets over time happen among small sets of people, and, sometimes, as the result of months of self-redistribution, in which a user recirculates

her/his own prior post by replying to it. These persistent tweets may be characterized as beacons for attention and action. The persistence of the individuals engaging in the conversation is reflected in the tweet's longevity. An interesting aspect of this finding may be that protracted conversation (recall that message duration on Twitter is measured in seconds, not days) exists on the fringe: these are conversations that—for whatever reason—motivate the investment of time in action to broadcast one's perspective in ways that appeal to identity, morality, belief, and, sometimes, obsession.

As described in Chapter 3, persistent paths often contain multiple handles. About half of the CITs in this study support this finding. The other half of the CITs use hashtags to attract attention and establish a presence in particular conversations, as described in Chapter 3. Mentioning a Twitter user in a tweet is an information practice used to summon the attention of a particular user to a post, which may signal to network members that the information is a priority due to its relevance, timeliness, or completeness. First, there is a presumption that the mentioned party will be interested in the topic of the post (relevance). Second, this practice is a means of communicating to other members of the network not only that the content of the tweet is newsworthy, but also that the information either is so timely that the news authority has not covered it yet (timeliness), or that news coverage thus far excludes important information (completeness). Thus, including news organization handles in a tweet is an information practice that to some extent conveys temporal priority.

4.2 Post-Automation Synopsis

This section provides a synopsis of findings from both types of analysis for each news entity in the post-automation period (September 15 through September 30, 2016). Figure 4.4 provides a snapshot of relative tweet frequency for each news entity during the post-automation

period. The chart demonstrates the level of engagement and relative size of each network. The latimes network is nearly five times larger than the koreatimes network, and nearly four times the size of the laopinionla network.

Figure 4.4 Post-Automation Tweets

	15-Sep	16-Sep	17-Sep	18-Sep	19-Sep	20-Sep	21-Sep	22-Sep	23-Sep	24-Sep	25-Sep	26-Sep	27-Sep	28-Sep	29-Sep	30-Sep
koreatimes	171	119	362	342	415	251	958	420	243	412	423	689	239	449	470	196
laopinionla	399	370	183	328	366	587	371	274	368	310	275	544	822	947	952	435
latimes	2040	720	652	85	2387	4989	1455	207	342	525	8405	2170	2247	1068	476	1596
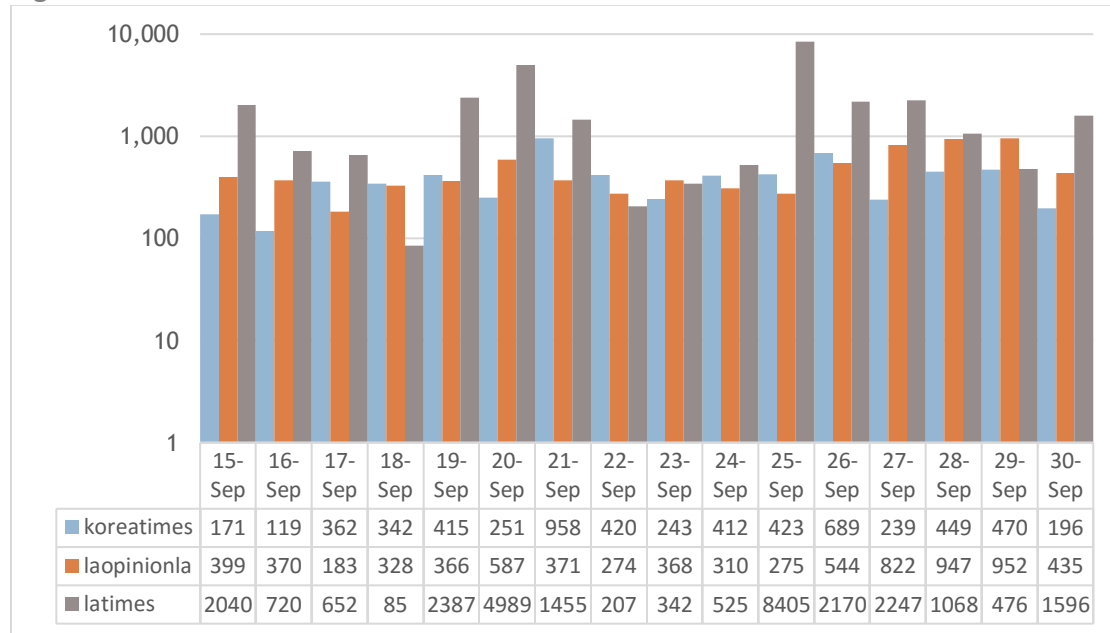
Count of tweets by news entity during the post-automation period, logarithmically scaled.

4.2.1 Post-automation social network analyses

The same analyses are performed for each network in the post-automation period (September 15-30, 2016) to create the opportunity for pairwise comparison of networks before and after the implementation of automated solutions for social media engagement. This section provides an overview of these findings for each news entity in the post-automation period.

The post-automation social network graphs are relatively similar to their pre-automation counterparts, with a large community clustered around the central node, as shown in Figure 4.5. Surrounding this large, dense cluster are many satellite clusters, each with its own interesting topology, which is explained in the subsequent case studies.
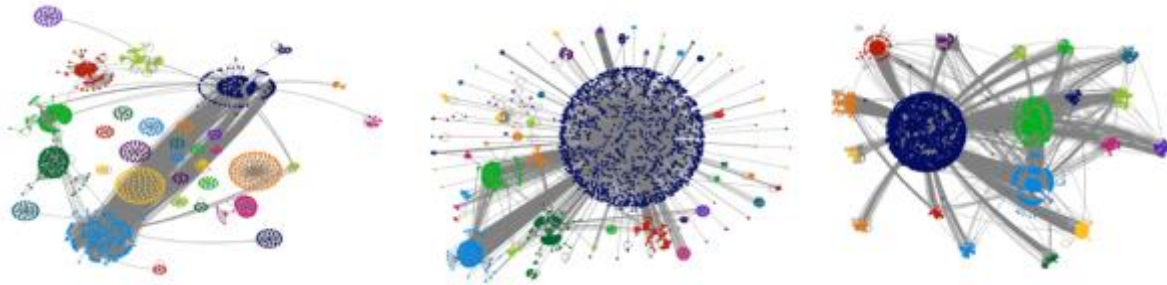
Social network graphs of the tweet-to-tweet networks for koreatimes, laopinionla, and latimes, respectively, during the post-automation period (September 15 through September 30, 2016). Created by the author using NodeXL Pro.

4.2.2 Post-automation informetric network analyses

Figure 4.6 depicts the informetric persistent paths graphs for each of the networks during the post-automation period. Again, these graphs were used to identify the most persistent paths in each network for designation of CITs.

Figure 4.6 Informetric Network Paths Graphs, Post-Automation
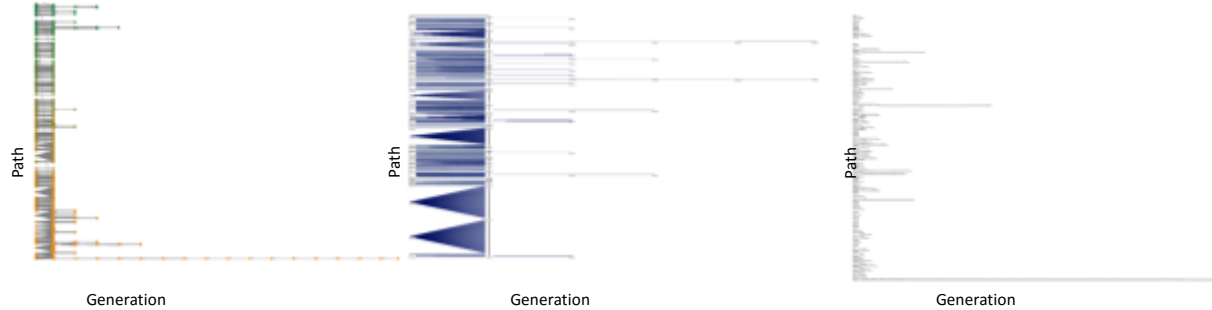
4.3 Persistent Path Topics

Table 4.1 highlights the CITs selected for each network in the time periods before and after automation. As described in Chapter 3, these tweets were selected on the basis of being (1) tweets that persisted through the greatest number of generations in each network, or (2) representative of typical tweets in the network with relatively high persistence compared with the other tweets in each network.

Iterative interpretive analysis of each CIT in the broader context of its social network, historical and situational background, and potential for varied interpretation produced several

rich examples of tweets that violated the culturally informed expectations of each news organization's readership. Bearing my own views and tendencies in mind, I employed the TAFIP to analyze how the news organizations prioritized these CITs and whether this prioritization met the expectations of the readership. The three case studies that follow illustrate how cultural time orientation was manifested in the CITs.

Chapter 5: Historical Recognition, Animal Rights, and *The Korea Times* Twitter Network

Emergent themes in the koreatimes pre-automation network include historical recognition, trade, and business or career opportunity. Each of these themes is consistent with characterizations of future time oriented cultures. Using the TAFIP to contemplate the sociopolitical influences on the persistent tweets in the koreatimes networks before and after automation reveals deep cultural history that influences how the news organization uses the Twitter platform.

5.1 Pre-Automation

The koreatimes Twitter network during the pre-automation period experienced little activity. (See Figure 5.1.) It consists primarily of in-bound messages mentioning @koreatimes, indicating a likely perception in the community that *The Korea Times* is an authority among the 61 vertexes in the network. Its general star-like structure, in combination with high in-degree centrality, denotes a "broadcast" network in the Himelboim et al. (2017) typology.

Figure 5.1 koreatimes Social Network Graph, Pre-Automation
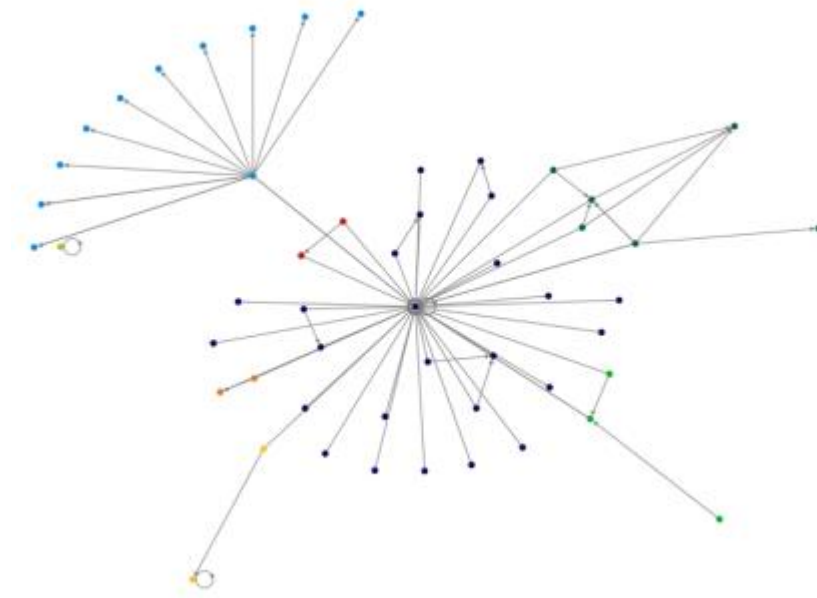
The koreatimes graph represents a network of 61 individuals whose tweets in the pre-automation period contained *koreatimes, thekortimes,* or *koreatimes1*, or who were replied to or mentioned in those tweets. The tweets in the network were tweeted over the 16-day, 23-hour, 56-minute period from Friday, March 20, 2015, at 00:01 UTC to Sunday, April 5, 2015, at 23:57 UTC. The graph is directed, and its vertexes were grouped by cluster using the Clauset-Newman-Moore cluster algorithm. The graph was laid out using the Harel-Koren Fast Multiscale layout algorithm. Vertexes represent people engaged in discourse containing the terms. Created by the author using NodeXL Pro.

Figure 5.1 is notable for its primary cluster centered on the @koreatimes vertex, and a fan-shaped offshoot emanating from a network member with the handle, @sacredservantjp. This Osaka-based network member writes blogs on conspiracy-related topics such as the "Illuminuti" (sic), and redistributes anti-Semitic works (e.g., Martin Luther's *On the Jews and their Lies*) via a shared Google drive.

A network serving both broadcast and support functions would have nearly equivalent in- and out-degree centrality. The central node of the koreatimes pre-automation network has high in-degree and low out-degree centrality scores (see Table 5.1), which indicates that @koreatimes did not provide much in the way of support for its audience during the pre-automation period. However, in the post-automation period, @koreatimes's ratio of in- to out-degree centrality is even more disproportionate (that is, even more broadcasting and less support. Using the TAFIP

to guide my thinking and focusing on the prioritization of news items, I reasoned that the

increasingly imbalanced in- and out-degree centrality could be an indicator of an immature

support or broadcast network, but it also might represent an online strategy that enacts cultural

values. As discussed in Chapter 2, future-oriented cultures place high value on interpersonal

relationships and formal communication. Confucian thought—which values agreeableness,

education, loyalty, obedience, and reverence—permeates Korean culture, including business

communication and information practices.

Table 5.1 koreatimes Degree Centrality, Pre-Automation

	In-Degree	Out-Degree
Pre-Automation	39	1
Post-Automation	229	1

The ratio of in-degree to out-degree edges is exacerbated in
the post-automation period. Created by the author.

Koreans' cultural aversion to saying "no" can lead to vague characterizations of

commitment and opinion. The prioritization of formal and respectful interpersonal

communication above temporal concerns may explain part of Koreans' tolerance for the longer

meetings and redundant conversations required to elicit precise meaning and shared

understanding. These cultural characteristics are reflected to varying degrees in the koreatimes

Twitter network before and after automation. With these customs in mind, it makes sense that

The Korea Times might find the abbreviated and impersonal nature of social media networks

suitable for alerts, event announcements, and infotainment, but not for interpersonal conversation

concerning important issues. Further, Twitter users may not be a target market for the news

entity at the moment, especially if it lacks the resources necessary to attract this readership—a

reasonable conclusion, given the news entity's still-active advertisement seeking a social media

manager.

The metadata reveals that the koreatimes tweets in the pre-automation period were

produced using a browser-based Twitter client. This means that the tweets were either typed

directly into the @koreatimes status window on the Twitter website, or that a Web-based Twitter

management tool was used. However, the conclusion that the social media manager did not use

third-party software to post tweets is supported by a lack of the typical file extensions and file-

naming conventions of automated solutions in the underlying code.

Figure 5.2 koreatimes Informetric Network Graph, Pre-Automation
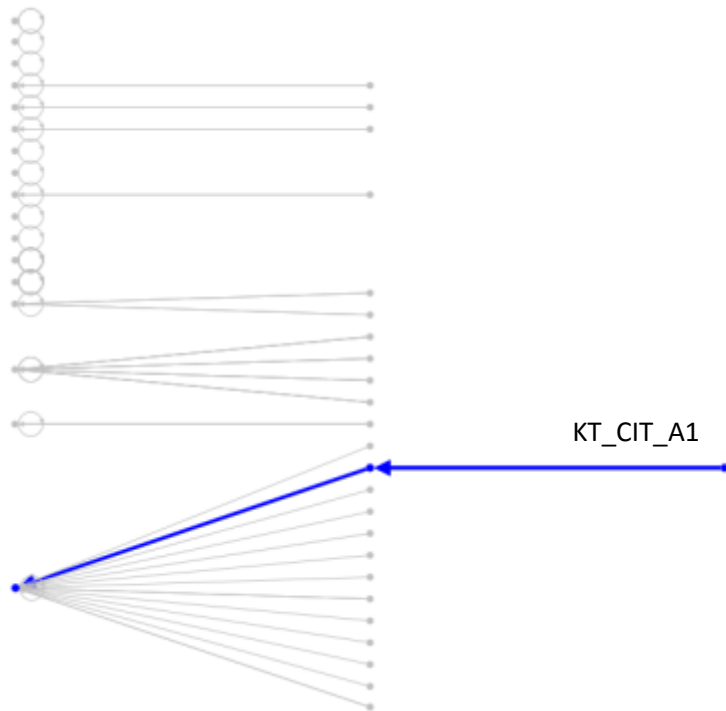
The critical incident tweet selected for the koreatimes pre-automation period (KT_CIT_A1) persists for three generations. Created by the author using NodeXL Pro.

Though the pre-automation koreatimes network is small and sparse, one tweet endured

for three generations, as shown in Figure 5.2. The longest path in the koreatimes network during

the pre-automation period begins with a report of fire in the demilitarized zone between North

and South Korea. The tweet contains an image of smoke cast against a blue sky, pluming above a

non-descript building from the vantage point of an observer on the far side of a highway or road.

(See Figure 5.3.)

Figure 5.3 koreatimes Critical Incident Tweet (KT_CIT_A1), Pre-Automation

Yonhap News Agency published the original news article cited by *The Korea Times*

online on March 23, 2015, at 15:14. The English version of the Korea-based *The Korea Times*

published an identical version of the Yonhap article almost an hour later, at 16:03. Interestingly,

most of the posts emanating from @koreatimes link to articles on the news organization's

website that are identical or nearly identical to earlier news stories published online by

competing news agencies.

The koreatimes pre-automation CIT (KT_CIT_A1) originated from @thekortimes, which

is the Seoul-based news organization operating independently from the Korea Times, Inc., in Los

Angeles. The original tweet from @thekortimes appeared on Twitter at 11:45pm on March 22,

2015 (all times UTC), and the Los Angeles-based @koreatimes1 created an identical tweet

linking to the Seoul-based *Korea Times* article at 6:45am on March 23, 2015. However, the most

persistent tweet is a response to the original @thekortimes version of the tweet from a network

member based in Melbourne, Australia. This response added the @koreatimes1 handle to the @thekortimes tweet in a post that appeared on Twitter at 11:00pm on March 23, 2015. The elapsed time from the original tweet to the in-bound alert to @koreatimes was nearly 24 hours, though the @koreatimes version of the story was tweeted in just under 8 hours.

Overall themes in the content of all of the posts in the koreatimes network during the pre-automation period include a persistent, identity-based critical attitude toward China, ongoing interest and/or concern for issues related to the relationship between North and South Korea, and concern about historical recognition of abuses of Koreans committed by the Japanese during the first half of the 20th century. These themes are rooted in the preservation of culturally inscribed values throughout a long history, which is characteristic of future time oriented societies. This may seem counterintuitive at first glance; however, recall from Chapter 2 that future time oriented societies ensure the transmission of cultural values through multiple future generations through ritual communication and hierarchical control of time.

A comparison of the network's prevalent themes in all of the posts to the news articles published by *The Korea Times,* trending hashtags on Twitter for the Los Angeles region, and the topics of the tweets with trending hashtags (shown in Figure 5.4) provides context for the news items that were available to the social media manager around the time that the CIT appeared in the feed.

Figure 5.4 koreatimes Topic and Hashtag Comparison, Pre-Automation

Topics of koreatimes Tweets, Pre-Automation Including U.S. & Korean Twitter Handles
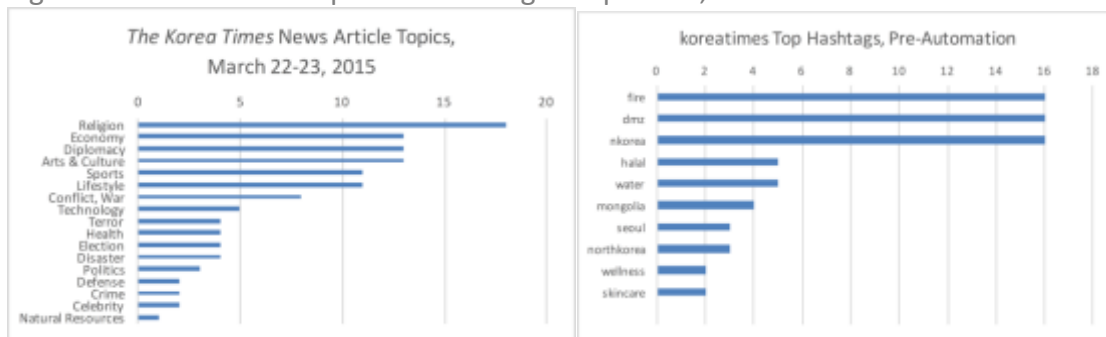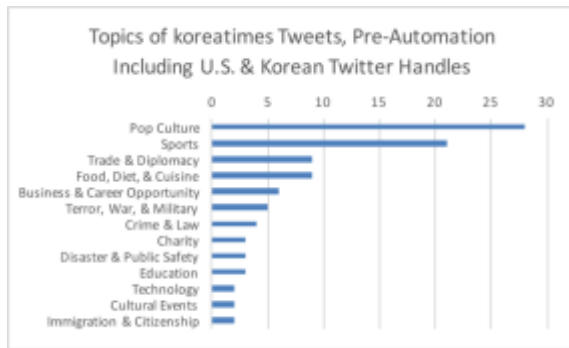
Exploring differences in topics covered by the news organization via different media sheds light on prioritization. Created by the author. Sources: Factiva, ProQuest, koreatimes.com, Twitter.

The most frequent news topics in articles published by *The Korea Times* (both U.S.- and Korea-based) during the 48 hours in which the CIT appeared pertain to religion, the economy, diplomacy, and arts and culture. In contrast, the most frequent tweet topics in the koreatimes pre-automation period concern pop culture, sports, and trade and diplomacy. Given these findings, I considered whether and how these topics might reflect characteristics associated with future time oriented cultures.

Recall from Chapter 2 that future oriented cultures place a high value on persistence, status, adaptability, face, work ethic, frugality, and short-term sacrifice for long-term security and stability. Interestingly, many of these attributes are tenets of Confucian practice and Christianity, the most prominent spiritual influences in South Korea. In Chapter 2, I alluded to the ways in which religious authorities control a culture's conceptualization of time. The Church imposed expectations for the types of activity that were appropriate at various moments of the day and week, and controlled the tools and representation of time through calendars, clocks, bells, rituals, and admonitions that structured the lives of its followers. In the 20th century, the Confucian work ethic was credited with the growth and modernization of the Korean economy (and other East Asian economies). Thus, it is reasonable to conclude that the prominence of news stories pertaining to religion, economy, and diplomacy is related to the persistence of several

cultural values, including work ethic, sacrifice, and the importance of human relationships to moral piety, all of which are tied to a cultural emphasis on the future.

Certainly, the dominance of pop culture and sports news items in the koreatimes Twitter feed indicates a departure from the traditional prioritization of information practiced by print publishers. This difference may stem from a few different conditions. First, as mentioned previously, *The Korea Times* may view Twitter as a platform for entertainment, general interest news stories, and breaking news alerts, but not for heavier topics that are covered in depth by newspaper articles. It also may be that the age and interests of the social media manager during the pre-automation period reflect a modern Korean-American perspective that prioritizes entertainment and celebrity engagement with the community over the religious, economic, and political themes valued highly in traditional Korean culture.

Recall from Chapter 3 that information flow can be assessed by examining the structure of persistent paths within the social network graph. For example, the topology of the koreatimes pre-automation CIT, shown in Figure 5.5, demonstrates how information flowed among the three participants who took action on the news. The initial tweet, emanating from one of the koreatimes handles (they've since been merged), caught the attention of @st_disegno, who interpreted the message and accorded enough value to it to take action by adding additional recipients to a reply. The third member of the CIT group, @emergency_life, also found the news item worthy of the attention, time, and effort to add more information and redistribute it. It should be noted that taking effortful action on a tweet is rare. Recent research on news diffusion through Twitter networks finds that less than 1% of information cascades in Twitter networks consist of more than 7 nodes, and fewer than 4% persist beyond two generations (Goel et al., 2012). Even in large clusters, diffusion beyond two generations is extremely rare.

Very recent general interest articles about Twitter draw attention to what may be inferred from the reply-to-retweet ratio in terms of sentiment. For example, *Esquire* warns that "[i]f the number of replies to a tweet vastly outpaces its engagement in terms of likes and retweets, then something has gone horribly wrong" (O'Neil, 2017). While this is true for the controversial tweets examined in the article, there have been no studies to date that investigate the most persistent tweets in a network, regardless of their sentiment. The general rule of thumb described in lay audience advice columns says a reply-to-retweet ratio greater than 2:1 indicates a tweet has drawn significantly negative feedback. In the pre-automation period, the koreatimes CIT's reply-to-retweet ratio is 2:11, or about 18%. Understanding this ratio may be helpful in the formulation of strategies for more successful targeting and reach.

Figure 5.5 koreatimes CIT Topography and Topology, Pre-Automation
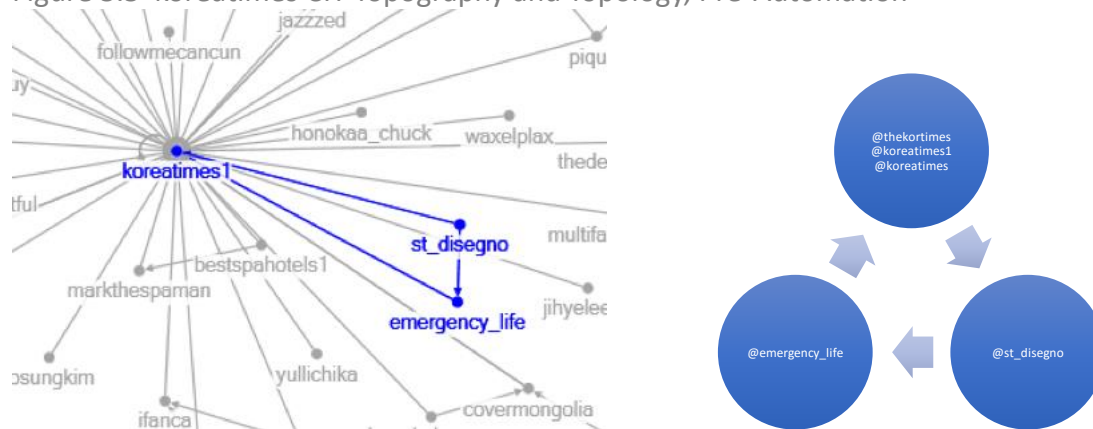
The topography of the tweet path in the social network graph (left) can shed light on relationships among individuals in the network; the topology of the tweet path (right) can provide insight into information flow. The topology of the koreatimes CIT (KT_CIT_A1) is a three-node ring. Created by the author.

While this network is rather sparse to infer much from the CIT topology, it is useful to illustrate the methodology. As shown in Figure 5.5, the topology—the structure of information flow without distance or time effects—of the CIT is a small ring comprising three nodes. Recall from Chapter 3 that information flows unidirectionally in a ring topology, and each node in the ring receives the entire message from its proximate neighbor. This means the information flows

quickly and without much chance of degradation; however, it also means that the absence of any single node disrupts the flow of information.

Since the organization engaged in very little activity in the pre-automation time period, a comparison of the koreatimes networks before and after automation may not yield much insight. In addition, what little activity did occur originated from three different Twitter handles as a result of a change in corporate ownership and the messy business of changing and consolidating social media identities. Nevertheless, there remains much to be considered in the pre-automation period, because, despite a lack of much online engagement on the part of the social media manager, the members of the koreatimes network employed the practice of mentioning the news authority's Twitter handle (@thekortimes, @koreatimes1, and finally, @koreatimes) at various points in the pre-automation period to call attention to posts on topics they consider important. As we shall see, this is also true in the post-automation network.

5.2 Post-Automation

The koreatimes post-automation social network graph, shown in Figure 5.6, comprises ~36 small community structures. The largest community cluster has the appearance of a support network centered on the @koreatimes vertex. Despite being the nucleus of the largest group in the network, @koreatimes generated very few tweets compared to the number of tweets in which koreatimes was mentioned by others. This is validated by the low out-degree centrality of the @koreatimes vertex: 1. As observed in the pre-automation networks, news organizations account for many of the central nodes of the other network clusters in the koreatimes network after automation.

Figure 5.6 koreatimes Social Network Graph, Post-Automation
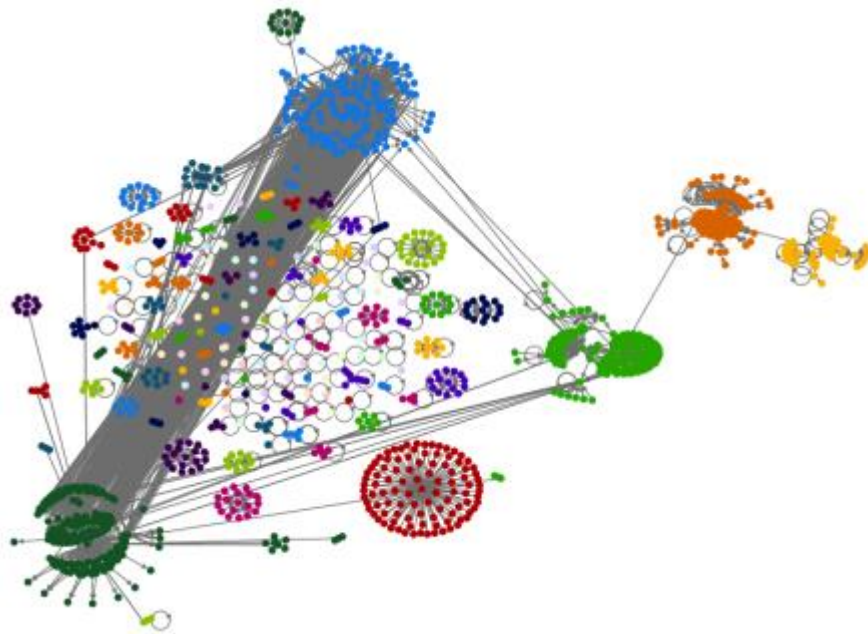
Nodes in the post-automation social network graph represent 1,913 Twitter users whose tweets contained *koreatimes,* or who were replied to or mentioned in those tweets. The tweets in the network were tweeted over the 15-day, 22-hour, 40-minute period from Thursday, September 15, 2016, at 00:06 UTC to Friday, September 30, 2016, at 22:46 UTC. The graph is directed, and its vertexes were grouped by cluster using the Clauset-Newman-Moore cluster algorithm. The graph was laid out using the Harel-Koren Fast Multiscale layout algorithm. Created by the author using NodeXL Pro.

The network's groups are infrequently connected, which means that the more peripheral nodes, with weaker ties to the network's core nodes, are vital for any tweet to diffuse beyond the structural constraints of a group (Weng, 2013). These peripheral nodes often take on a gatekeeping role. As described in Chapter 3, gatekeepers wield significant power over the free flow of information through a social network (Granovetter, 1979). Thus, a post's virality (as measured by popularity/exposure) and persistence (path duration in terms of elapsed time and number of generations) beyond a small cluster of discussants would be improbable in this network. Indeed, any network of multiple, sparsely connected groups of people has a low likelihood of information virality and/or persistence over time.

Figure 5.7 koreatimes Informetric Network Graph, Post-Automation
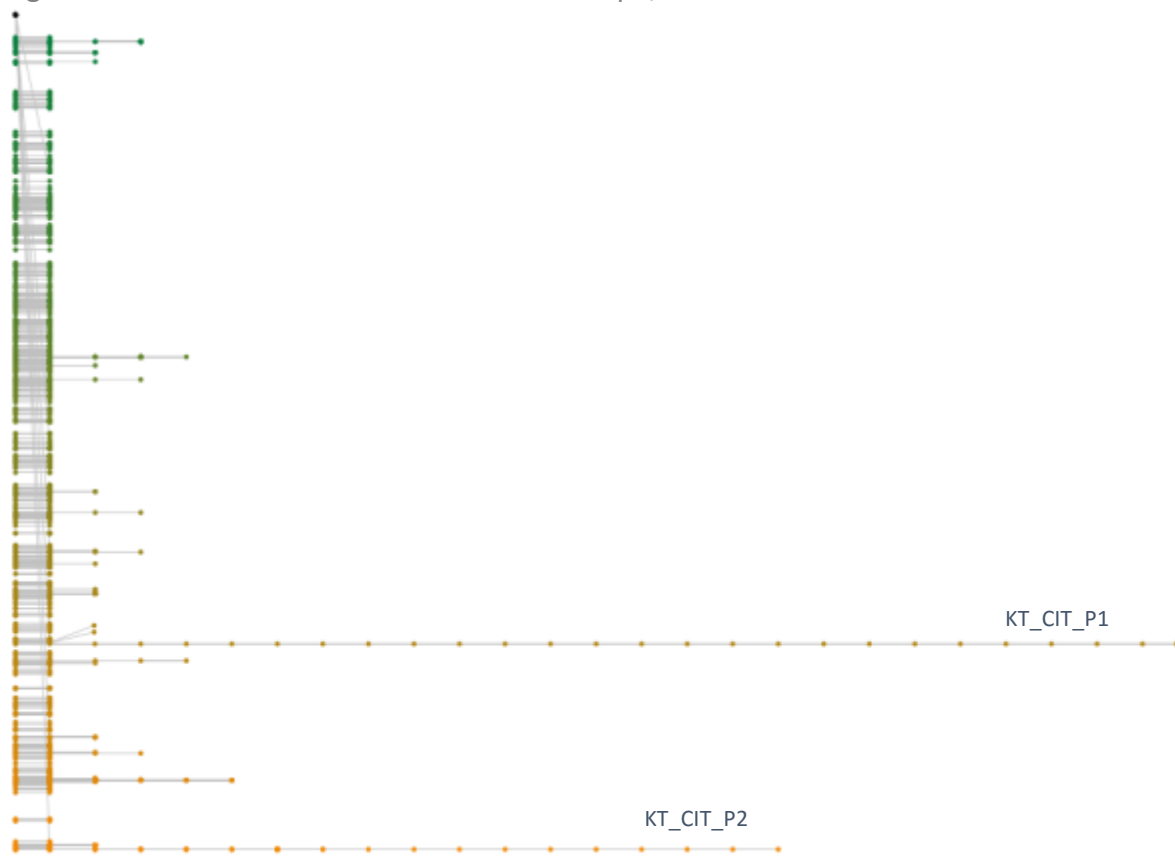
KT_CIT_P1

KT_CIT_P2

The most persistent path revealed in the informetric network analysis, labeled KT_CIT_P1, passes through 27 generations. The second CIT, persisting for 18 generations, is labeled KT_CIT_P2. Created by the author using NodeXL Pro.

Figure 5.8 koreatimes CIT (KT_CIT_P2), Post-Automation

The second most persistent path in the koreatimes network is emblematic of a shift in cultural norms. Source: Twitter.

In the post-automation period, we see that the ratio of @koreatimes's in- to out-degree centrality has declined, rather than improved. This is not surprising, as the organization remains without a social media manager, and the automation implemented is rather rudimentary. The network should not be classified as a broadcast network at this point; we may see change in the network structure in the future, if the organization decides to develop a typical broadcast or support network. However, the automation that the news organization has implemented may be serving it well. The networks both before and after automation arise primarily through announcements about cultural and sporting events. For this purpose, the automation may be sufficient.

Figure 5.9 koreatimes CIT Topography and Topology, Post-Automation
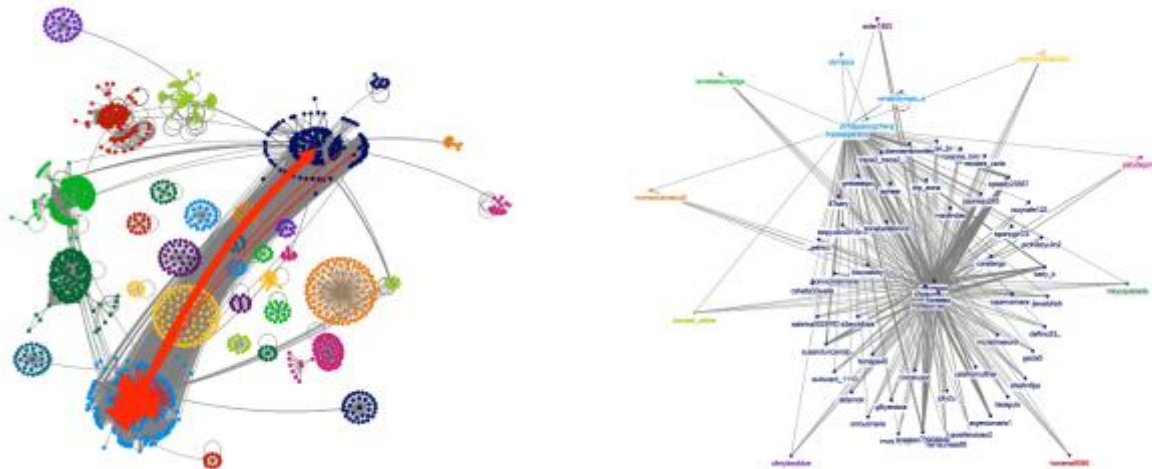
KT_CIT_P2 originates in a cluster centering on the handle of an animal rights activist. Created by the author.

Focusing on the Attention phase of the TAFIP, a large proportion of the tweets in the network concern events featuring film, music, and sports celebrities. The celebrity-related tweets in the koreatimes Twitter stream typically reference events in which fans participate, which supports the notion that future-oriented cultures value in-person relationship building. Though the information is conveyed through a less-personal medium, the persistent content promotes interpersonal engagement. Further, the tweets refer to events during which fans may interact with

celebrities in person, indicating the importance of planning for the future through scheduling leisure activities in advance, a future-oriented information practice. Two CITs were identified in the koreatimes post-automation network (see Figure 5.7); one reports on fan engagement with two Korean pop stars (KT_CIT_P1), and the other is a recurrence of a persistent meme criticizing the Korean dog meat trade (KT_CIT_P2).

Analyzing the koreatimes Twitter stream during the Evaluation and Prioritization phases of the TAFIP, it is clear that certain types of news, such as celebrity events, are highly valued and prioritized. The emphasis on face-to-face celebrity/fan interaction is particularly representative of Koreans' penchant for pop culture, as well as the importance with which they regard personal relationships. The koreatimes Twitter feed is teeming with photos and videos of fans posing with celebrities, documenting the momentous occasions and gaining social capital in the process. It is not surprising that news about Korean pop culture drives popularity on Twitter as measured by number of retweets.

Documentation of face-to-face engagement, then, is a future time oriented information practice. KT_CIT_P1, shown in Figure 5.10, is the most persistent tweet in the koreatimes post-automation network. The CIT persistent path is chock full of photos and videos of the celebrities posing with their adoring fans.

Figure 5.10 Documenting Celebrity-Fan Engagement

KT_CIT_P1 exhibits a future time oriented information practice: documenting celebrity-fan engagement as evidence of relationship status. Source: Twitter.

This perspective is supported by an analysis of trending hashtags during the pre- and post-automation periods. While the Twitter trending hashtags during the period of the CIT path in the koreatimes pre-automation network represent tweets about celebrities, events, and sports, the persistent path's hashtags—#Fire, #DMZ, and #NKorea—serve a public-service announcement function. The hashtags employed in the post-automation koreatimes CITs are limited to events and celebrity names, more aligned with the general Los Angeles-based Twitter network.

In the post-automation period, emergent themes include animal rights, technology, and the environment. Historical recognition underlies the most persistent tweet in the post-automation network, as well. See Figure 5.11 for a comparison of news article topics and Twitter hashtags referenced in tweets during the post-automation period. The broadening of topics covered in the post-automation period may reflect a shift in that topics previously reserved for the print version and/or one-on-one discussion are now appearing in the feed as a result of automation.

Figure 5.11 koreatimes Topic and Hashtag Comparison, Post-Automation

The Korea Times News Article Topics, September 21, 2016

The Korea Times Top Newspaper Article Topics, Post-Automation

koreatimes Top Hashtag Topics, Post-Automation

koreatimes Top Hashtags, Post-Automation

Comparing the topics of news articles and hashtags reveals how *The Korea Times* uses the different news distribution platforms.

The second CIT in the koreatimes network during the post-automation period is a meme with a long history. Though it is one of the more enduring paths in the network, the path is not the longest; however, it bears examination, because variations on the theme appear throughout the koreatimes network during the research period. These tweets provoke discussion on the topic of the dog meat trade in China, South Korea, and a handful of other nations. This topic attracts

attention across many cultures, as shown by the Italian query in Figure 5.12. This particular version of the meme urges the community to boycott the 2018 Olympics in Pyeong Chang as a means for South Korea "to take a stand against this brutality." Some of the cultural values and beliefs that support the practice persist among koreatimes network members, while other moral stances serve as impetus for denouncing the practice and actively directing resources (time, attention, and money) to its banishment. These patterns of behavior suggest that conflicting and/or changing values in the Korean culture provoke persistent tweets that call for the attention of news authorities like @koreatimes.

Figure 5.12 Automated Tweet Draws Ire or Exploitation

@winterolympic_e appears to be an automated Twitter account.

Activists and and dog meat enthusiasts provide conflicting accounts of the evolution of the dog meat trade in South Korea. Some activists emphasize the more recent interest in dog meat as a treatment for erectile dysfunction; some online accounts claim that the cruelty involved

in the practice of slaughtering dogs increases the amount of adrenaline in the meat, leading to enhanced virility. Nearly 96% of the 2.5 million dogs slaughtered for food in South Korea annually are consumed in a tonic form called *gaesoju.* One of the benefits of this tonic is purported to be sexual vigor. Whether or not there is any scientific evidence to support this belief, the dog meat trade is a contentious topic on Twitter. Other stakeholders point to the long history of dog meat consumption in Korea and several other nations as evidence of the trade's deep cultural roots. In addition, it is frequently noted that cultural culinary preferences should be viewed with worldly understanding. The conditions under which dogs in South Korea are raised and slaughtered may offend people who are accustomed to thinking about dogs as pets. Keeping dogs as pets is very new in South Korea, and mainly practiced among the younger generations who participate in pop culture and place value on Western social norms. In fact, the Korean language has different terms for dogs that are raised for meat versus those bred as pets. Such semantic distinctions exist in English, as well: chickens versus poultry, cows versus beef.

Through the course of this research, I encountered an overwhelming amount of horrific imagery. However, Western agrobusiness practices could be similarly scrutinized by people who have different types of relationships with animals we "farm," such as poultry and pork.

The emergence of animal rights activism among the younger South Korean and Korean-American generations can be seen as a byproduct of the desire for modernization/Westernization. This modernization has been credited with the rapid economic growth that pulled South Koreans out of an era of food insecurity and political instability following emancipation from Japanese rule in 1945. The issue of historical recognition—especially pertaining to acknowledgement and reparations for abuses suffered by Koreans at the hands of the Japanese during occupation—is a striking manifestation of tensions between cultural persistence and post-colonial modernization.

An ethnography of Korean attitudes about animal rights finds conflicting cultural claims about the human-animal relationship in Confucian societies (Dugnoille, 2014). After emancipation from the Japanese, "everyone had to start from scratch, motivated by a sense of crisis, a lingering resentment of the Japanese, and the feeling that there was nothing to lose" (Porter, 1990, p. 471). The intense desire for modernization and establishment of a new Korean identity propelled South Korea's transformation into an affluent and democratic society.

"The competitive spirit that has resulted is perhaps the single greatest source of advantage that Korean companies have possessed" (Porter, 1990, p. 471). This post-colonial drive for modernization co-evolved with a contemporary South Korean identity that reflects its changing culture. These changes can be seen in the ways that Koreans alter their information practices to accommodate new perspectives. For example, Koreans use different terms to reflect the varied contexts in which dogs are bred and raised. The relatively recent introduction of such terms of distinction suggest cultural changes that necessitate a more complex vocabulary to accommodate a variety of preferences/perspectives.

Rapid modernization and exposure to Western cultural practices has influenced Korean culinary habits, as well. For example, pizza is a favorite foreign food among South Koreans, though its preparation tends to vary from Western practices with the inclusion of a variety of different ingredients, such as corn, sweet potato, mayonnaise, and bulgogi (strips of beef or pork). Thus, Western influences on food preferences can be seen both in South Korea and in Korean-American cuisine, yet Korean tastes are preserved through the use of different ingredients.

An interesting study of Korean national identity finds that diasporic communities must achieve a balance among the need for inclusion in the host nation, the imperative to preserve a

collective history, and the desire to resist assimilation to create a self-determined dual-national identity (Park, 2005). In the Korean-American community, this balancing act may be observed in the reactions to criticism of the Korean dog meat trade.

Cultural time orientation manifests in an indifference toward animal welfare in South Korea. "It is a country that in the past put the economy first over moral considerations," explains Giny Woo, founder of Koreandogs.com. "So the country is still behind the developed world with regard to animal welfare issues" (2015). Woo attributes the failure to end cruel slaughtering practices in the dog meat trade to the future time oriented trait of conditional judgment. Koreans "don't like to impose on other people's choices. And the Korean government basically avoids the dog meat issue and keeps it in a legal blind spot to protect the industry" (Woo, 2015). These insights are supported by Czajkowski's 2014 review of the state and scope of the South Korean dog meat trade: "[T]he legal uncertainty surrounding the dog meat trade, coupled with a policy impasse, creates a difficult climate in which to bring an end to the dog meat trade."

Woo's activism focuses on strengthening relationships among sister cities in the United States and Korea to motivate activism that puts pressure on local and federal regulators. The activists press for legislative clarity on the status of dogs as livestock or companion animals. The sister-city grassroots approach takes a long-term view, which respects the "home culture" and has a long-term time horizon for effecting change. Woo advocates for incremental change through political and economic pressure, and describes the potential long-term benefit of ending the dog meat trade globally. "Our fight is also important because it can have an impact on other injustices, such as the dog meat trade in China. In the same way, stopping China's dog meat trade will have a big impact on stopping Korea's trade. So it is hoped that everyone can work together as a united front against dog meat trade everywhere" (Woo, 2015).

Traumatized by an incident in her childhood in Incheon, South Korea—witnessing a group of men torturing a dog—Woo is committed to ending the dog meat trade. Through systematic, incremental political campaigns, she is among a cadre of activists who appeal to the past/present time oriented values of American culture to motivate local political activism with international reach. Essentially, the activists' strategy is to piggyback on the international sister city programs in the United States, and leverage the relationship between the cities to exert political pressure on the mayors of Korean cities with dog meat farms and other businesses that profit from the dog meat trade. The aim is to get the mayors of U. S.-based sister cites to write public appeals to their counterparts in South Korea, pressing for an end to the Korean dog meat trade.

The campaign organizers—including both Woo and the author of KT_CIT_P2, @hopeesperanz, provide all manner of communication template and multimedia content for individuals to participate in each facet of the political campaign, including social media posts, sample letters, and petitions. As Woo explains:

> "There are so many ways you can help fight this cruel industry.
> We work very hard to make it easy for you to take action. All we
> ask for is your compassion and a little of your time" (2015).

Part of the long-term success of this approach are information practices that have unique characteristics with respect to their topography and topology. For example, the CIT path is formed through a combination of self-propagation and appeals to emotion in terms of absolute good and evil, both of which are associated with a past/present time orientation. The network's imbalanced in- and out-degree centrality could be an indicator of an immature support or broadcast network, but, as mentioned, it also might represent an online strategy that enacts cultural values.

In the United States during the industrial revolution, confinement and genetic selection of livestock became commonplace and American meat consumption increased in step with affordability. Similarly, animal experimentation in pharmaceutical research increased over the course of the 20th century. In the 1950s, public concern for animal welfare motivated the establishment of the Society for Animal Protective Legislation in 1955 and the Humane Methods of Slaughter Act was passed in 1958. In 1966, responding to public outcry over inhumane treatment of dogs, the United States passed the Animal Welfare Act. Shortly thereafter, Peter Singer published the highly influential *Animal Liberation,* and Henry Spira embarked on public campaigns against animal testing. With the founding of People for the Ethical Treatment of Animals (PETA) in 1980, the animal welfare and rights movement became a widespread issue of concern to the American public. Thus, the trajectory for public consciousness with respect to animal welfare began after a period of modernization that enabled food security, in much the same manner as in South Korea, but sooner.

The United States is among several nations that have passed resolutions calling for the South Korean government to prohibit dog meat consumption. Recalling Koreans' preference for face-to-face, relationship-building interaction and face-saving, it is no surprise that such international ridicule does little to prompt cultural change. Instead, foreign demands for cultural change in Korea instigate a defensive clinging to often-tenuous claims that dog meat consumption is an instrumental and longstanding cultural practice. A 2009 survey found 60% of Korean nationals support the practice of raising dogs as pets, while 55% oppose dog meat consumption (Podberscek, 2009). The booming pet market for dogs and related products in Korea is estimated to number around 3 million (Czajkowski, 2014, p. 32).

This trend is being challenged, however, by a growing demand for erectile dysfunction

treatments. In 2014, the South Korean erectile dysfunction drug market reached 100 billion won, or $865,987, and in 2011, the prevalence of erectile dysfunction in South Korea was estimated to be 32.4% (Ryu et al., 2013; Ham et al., 2008). Today, the Asia-Pacific region represents more than a quarter of the $4.1295 billion global erectile dysfunction market comprising both pharmaceuticals and homeopathic remedies (Coherent, 2017; Ham et al. 2008). One way to examine the implications of this market growth through a temporal lens is to consider South Korea's changing demographics. Though South Korea's population is relatively young compared to those of other developed economies, by 2050 the Organization for Economic Cooperation and Development (OECD) estimates it will be the second-oldest (OECD, 2014). Figure 5.13 shows the population trends in the three national cultures under study.

Figure 5.13 Elderly Population by Country, 1970-2014
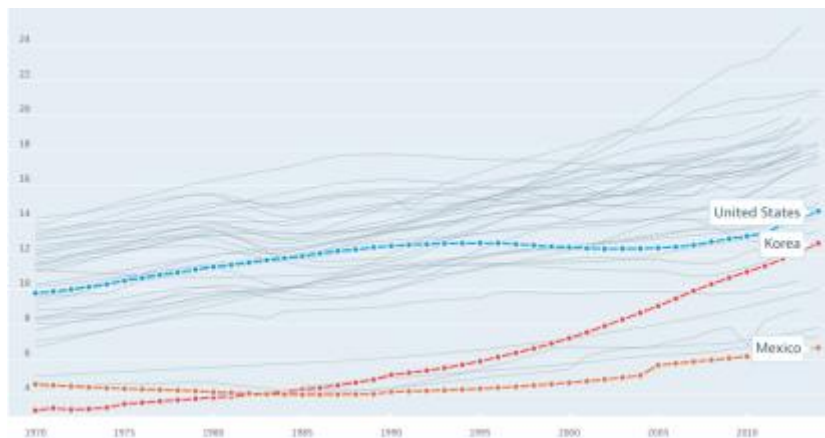
Source: OECD.

Already, the black market for erectile dysfunction drugs in South Korea is estimated to match the above-board pharmaceutical market, and the rate of dog meat consumption in Korea has increased in the past 10 years, outpacing increases in the practice of keeping dogs as pets. In 2017, about 19% of South Korean households report having at least one pet, up from 17.4% in 2010 (Euromonitor International, 2017; Kim, 2016). Simultaneously, dealers and restaurants market the health benefits of dog meat to an aging population. A 2015 Gallup poll commissioned

by Asia Canine Protection Alliance South Korea reveals 53% of respondents have tried dog meat before, and more than 58% say the industry should be legal.

Although dog meat is consumed year round in South Korea, it is eaten most frequently during the *Boknal* days *(Chobuk, Jungbok,* and *Malbok),* traditional events marking the three hottest days of the year. "Historically, the consumption of dog meat is associated with individuals trying to maintain their stamina during summer heat," explains Czajkowski (2014, p. 32). The Korean dog meat industry, including both the production and sale of dogs, is estimated to be worth about $2 billion U. S. dollars (Czajkowski, 2014, p. 32).

Interestingly, some animal rights activists report that domestic awareness campaigns are more effective than foreign pressure (Shim, 2015). For example, Jo Hee-kyung, head of the non-profit Korean Animal Welfare Association, explains that domestic grass-roots campaigns in South Korea discouraging dog meat consumption in the summer months have been effective in changing the cultural attitude toward dog meat consumption. South Korean President Moon Jae-in has been an outspoken advocate of animal rights, and his adoption of two dogs and a cat have been heavily covered in social media posts, which will influence the Korean perspective on the role of animals in Korean society.

Therefore, the KT_CIT_P2 represents a veritable hattrick: by calling for a boycott of the 2018 Olympics in Pyeong Chang, the CIT engages with sports, trade, and diplomacy; it evokes notions of historical contention by targeting the dog meat trade, a cultural practice that arose during a period of food insecurity resulting from Japanese occupation; and it challenges attitudes about the human-animal relationship using the same technology that exposed Koreans and Korean-Americans who were eager to modernize and assimilate to Western notions of dogs as pets.

That said, exposure to Western attitudes about the human-animal relationship is not a prerequisite for animal welfare in Confucian societies. Some activists appeal to the Confucian notion of *jen*, which means impartial benevolence, for both maximizing mankind's sociality and the individual self-interests of its members. In the last several decades, Japanese and Korean animal activists have argued that animal welfare is an aspect of Confucianism's moral unity of heaven, nature, and man.

This disparity in approach—Western calls for immediate condemnation and legislation versus grassroots domestic awareness campaigns—reflects the respective cultural time orientations influencing the debate. While nations like the United States—with past/present cultural time orientations in the range of 20-30 on the CTO scale described in Chapter 2—press for an immediate end to the dog meat trade, the citizens of South Korea—with a CTO of 100— seem to respond more favorably to domestic awareness efforts. Differing cultural time orientations may be a contributing factor in the unanticipated resistance to foreign pressure. I suggest that U. S. policymaking on international animal rights issues has been short-sighted, because it fails to engage Koreans' valued outcomes. "No cultural practice or belief is intrinsically of value; cultural practices or beliefs are valuable only insofar as they provide people with outcomes that they value" (Ascher, 2010, p. 29).

Thus, the tension at the heart of KT_CIT_P2 pits assimilating Korean-American youth who view dogs as pets and the consumption of dog meat as an embarrassing, antiquated practice against older defenders of cultural food practices who prioritize virility over animal rights, and cultural sovereignty over foreign pressure. Recognizing this intractability, savvy animal rights activists tap into other cultural values to make their case.

The first tweet in the CIT path is a reply from an avid animal rights proponent

(@hopeesperanz) to a Twitter account that describes itself as "Introducing news and products about Winter Olympic" (@winter_olympic_e). The latter account is entirely automated, using a third-party software bridge, IFFFT. As described in Chapter 2, such software makes it possible for people to access and distribute online content across multiple platforms.

Is this a naïve action on the part of @hopeesperanz, or a calculated mention? The activist implies that the Winter Olympic Info authority is stifling balanced discourse; however, it is also possible that @hopeesperanz recognizes that tweets from @winter_olympic_e are generated automatically, and knows that automated accounts are less likely to take steps to mitigate negative feedback that can harm reputation than actively managed accounts. On further research, @hopeesperanz is one of three animal welfare activists whose handles appear in the CIT conversation path who are participating in the same highly organized, multi-year marketing effort to which Woo contributes. Activities are coordinated online at https://sites.google.com/site/stopkoreantorture/home, a document shared among members of a remarkable global distributed network. The pattern of engagement exhibited leads me to think that @hopeesperanz strategically distributed carefully crafted replies to automated accounts to exploit their inability to thwart negative feedback fast enough to mitigate its effects. Her position in the network (shown in Figure 5.9) is instrumental to the persistence of the CIT.

The TAFIP-guided analysis of the koreatimes network reveals that the news organization uses Twitter for news items that cater to the entertainment interests of the network, rather than for substantive reports on issues that would merit personal interaction, from a future time oriented perspective. This relegation of the platform for less heady topics contributes to sensationalist news coverage of celebrities akin to the penny papers of the mid-20th century, which were the source of gossip and entertainment for working-class Americans (see Chapter 7

for more on the roots of yellow journalism).

Chapter 6: Soccer, Immigration, and Journalism's Critical Watchdog Role in the *La Opinión* Twitter Network

Cultural time orientation is detected from the TAFIP analysis of the laopinionla networks in different ways before and after automation. This chapter delves into how the organization's tweet prioritization reflects characteristics of past/present time orientation, with a focus on the critical incident tweets (CITs) described in Chapter 4. Issues of identity, community status, and trust are explored in two case studies on polar ends of the news spectrum: soccer and immigration

6.1 Pre-Automation

As shown in Figure 6.1, the laopinionla pre-automation social network graph resembles a solar system; its sun is a large community clustered around @laopinionla, with about 70 smaller clusters in orbit around it. Many of these satellites are community clusters or support networks centered on other news agencies. These satellites are infrequently connected, as well, giving peripheral nodes increased control over the flow of information through the network.

Figure 6.1 laopinionla Social Network Graph, Pre-Automation
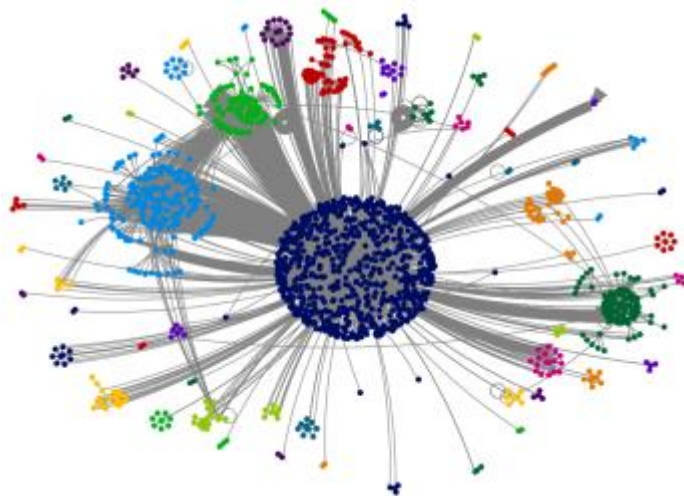
The laopinionla pre-automation social network graph represents a network of 1,482 Twitter users whose tweets in the requested range contained *laopinionla,* or who were replied to or mentioned in those tweets. The tweets in the network were tweeted over the 16-day, 23-hour, 56-minute period from Friday, March 20, 2015, at 00:01 UTC to Sunday, April 5, 2015, at 23:57 UTC. The graph is directed, and its vertexes were grouped by cluster using the Clauset-Newman-Moore cluster algorithm. The graph was laid out using the Harel-Koren Fast Multiscale layout algorithm. Created by the author using NodeXL Pro.

On examination of the characteristics of the laopinionla pre-automation network, many of the clusters are centered around nodes representing other news agencies, such as CNN en Español, *El País,* and the *Wall Street Journal*. In addition, clustered communities centered on smaller news organizations frequently form the outer ring of a broadcast network. These groups tend to be created through mentions, and the tweets that mention one news agency tend to mention multiple news organizations. These are calls for attention to issues considered newsworthy by those network members who consider *La Opinión* to be one among several authoritative news sources. Applying the Attention focus of the TAFIP, it is not surprising that network members would vie for the attention of news entities. Tweets that mention other network members tend to provide good returns in terms of attracting attention, as measured by retweets. What is surprising, though, is that the central vertexes of these broadcast networks (identified by high in-degree centrality and low out-degree centrality) seem to disregard the important data provided by attention-seeking network members: the issues they deem worthy of attention, which often are indicated through the use of hashtags.

During the TAFIP Evaluation phase, the *La Opinión* social media manager does not seem to assign significant value to the topics of the tweets that the network members are raising through their mentions of @laopinionla. Essentially, the mentioning of news organizations by network members acts as a barometer for news interest. I have not read of anyone drawing this conclusion in the literature, but it seems too straightforward to assume that no one has thought about it. This apparent lack of acknowledgement of the topics of interest among laopinionla's readership is explained by ImpreMedia's decision to focus on Facebook—rather than Twitter—engagement, as described in Chapter 2.

Figure 6.2 laopinionla Persistent Tweets, Pre-Automation
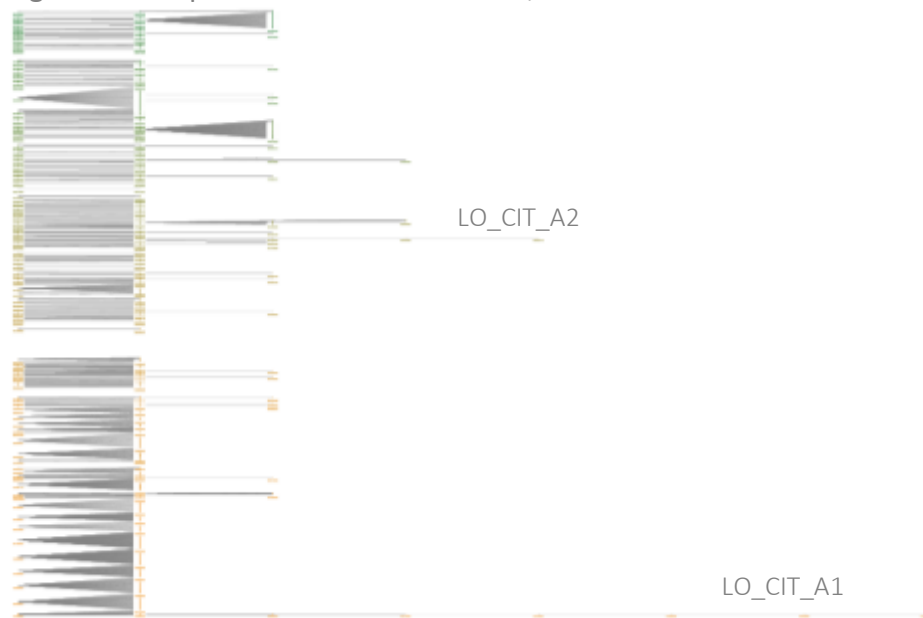
LO_CIT_A2

LO_CIT_A1

Two CITs—identified by their persistence over time through multiple generations—provide insight into the cultural time orientation of the laopinionla network. Created by the author.

The most persistent path in the network (labeled LO_CIT_A1 in Figure 6.2) begins with a complaint from a sports fan directed at a handful of sports broadcasters (see Figure 6.3). In the CIT, the user mentions the handles of representatives of the sports news authority ESPN to lodge a public criticism, which also becomes personal. As broadcasters often attain celebrity status (e.g., Howard Cosell, Michael Strahan, Diane Sawyer), this is an interesting mix of authority and personal–professional communication. The persistent path does not appear in the rankings of top tweets for the study period, likely because it is rarely retweeted by users with giant networks. The CIT is the most temporally salient of all the paths in the network, with 15% of its terms matching words on the temporal sentiment word list.

Figure 6.3 laopinionla CIT (LO_CIT_A1), Pre-Automation

The tweet is a critique of the retweeting habits of sports broadcasters. Source: Twitter.

On closer examination of the CIT, we learn that @0scar0lvera has a very small Twitter network; he follows 36 individuals on Twitter, most of whom are athletes or sports broadcasters, and he is followed by only 7 people. His activity on Twitter using that specific handle spanned from October 2014 through May 2016, during which time he posted 147 tweets. In comparison, the individuals he mentions (and from whom he expects responses) have hundreds of thousands of followers. For example, @rafaramosESPN, a sports broadcaster covering Mexican soccer for ESPN, has 282,000 followers. The simple math on this is not surprising; @rafaramosESPN responds almost exclusively to those fans who are very active (high number of tweets) or very well networked (high number of followers).

An avid sports fan, @0scar0lvera has no evident qualms with striking up conversation with celebrity athletes and sports broadcasters. At the end of October and beginning of November 2014, @0scar0lvera began to express resentment when his tweets went unacknowledged. This resentment intensified over time, as he was unable to elicit responses to most of his tweets mentioning star athletes and the commentators who cover them. Sometimes, @0scar0lvera replies to or quotes his own tweets in an apparent effort to capture the attention of

the users he mentions, and his frustration is evident in the strong terms he uses to describe the injustice his tweets suffer at the mercy of the ESPN broadcasters. For example, he criticizes @RedesESPN and @caroguillenESPN for their "annoying" and "odious" practice of retweeting their friends, and suggests following @rafaramosESPN, despite an absolute lack of attention to @0scar0lvera's tweets.

The tweets on the CIT path exhibit several of the characteristics of cultures with past/present time orientations as shown in Table 6.1. First, the CIT concerns news coverage of and fan engagement in discourse about sports, which is highly valued in past/present time orientation cultures. Most strikingly, @0scar0lvera shows no deference to the celebrities he mentions, indicating that he is not necessarily a fan, but, rather, considers himself an equal. This behavior represents the past/present time orientation perspective that relationships arise independent of status.

Further, the brief elapsed time between his tweets mentioning these celebrities and his subsequent complaints about being ignored indicate an expectation of immediacy, which is a clear indicator of the past/present time orientation, especially considering the sheer volume of tweets with which @0scar0lvera is competing for attention. Further, @0scar0lvera's displeasure suggests he views retweets as a form of validation of community membership and identity.

Table 6.1 Cultural Time Orientation Characteristics

	FUTURE	PAST/PRESENT
RELATIONSHIPS	Status	Independent of status
PERSONAL	Adaptability	Stability
FACE	Care, but it's a weakness	Save it
LEISURE	Meh	Gol!
MONEY	Save it	Spend it
REWARDS	Await me	Immediate
INVESTMENTS	Real Estate	Mutual Funds
BUSINESS SUCCESS	Market Position	Bottom Line
JUDGMENT	Contextual	Absolute

The concern for saving face plays an interesting role here, as well. While members of future time oriented cultures view efforts to save face as signs of weakness but value it anyway for the sake of the greater group or community, those with a past/present time orientation place a high value on individual reputation. This distinction helps explain why being ignored can lead to exasperation and lashing out by individuals on Twitter, especially those who are marginalized due to their relatively small number of followers and/or low level of engagement. It also explains why some news consumers employ specific information practices, such as mentioning a news authority, in bids for attention necessitated by limitations of the Twitter platform. Finally, the way that @0scar0lvera judges the behavior of the celebrities he mentions in his tweets exemplifies the past/present time orientation. The use of absolute terms like *nunca* and *odiosa* to describe the behavior of the broadcasters who ignore him suggests he views this behavior as a permanent state, devoid of contextual influence. This absolute judgment is a hallmark of past/present time orientation. It is clear he does not trust the sportscasters to conform to proper Twitter etiquette.

The CIT criticizes ESPN in a manner that suggests cronyism at the least, and injustice at the extreme. During the TAFIP Evaluation phase of my interpretive analysis of this CIT path, I found the injection of temporal information particularly telling (see Figure 6.4).

Figure 6.4 Historical Interjection in laopinionla CIT Path, Pre-Automation

Nick
@nickjim07

Replying to @blancalettyp

@blancalettyp Yo soy de los dinosaurios sigo a
Rafa desde @LaOpinionLA Serán unos 20
Años creó, siempre excelente con su forma
de escribir

Translate from Spanish

LIKE
1

9:56 AM - 27 Mar 2015

A La Puente-based sports fan contributes his perspective to the conversation,
calling attention to a sports broadcaster's long history of excellent reporting.
Source: Twitter.

The conversation is reined in by the historical perspective of a long-time community member who,
through an emphasis on the sports broadcaster's consistent reporting quality, appeals to the past/present
time orientation preference for stability in personal behavior. This interjection of historical perspective is
evident in the topography of the CIT path, as shown in Figure 6.5.

Figure 6.5 laopinionla CIT, Pre-Automation
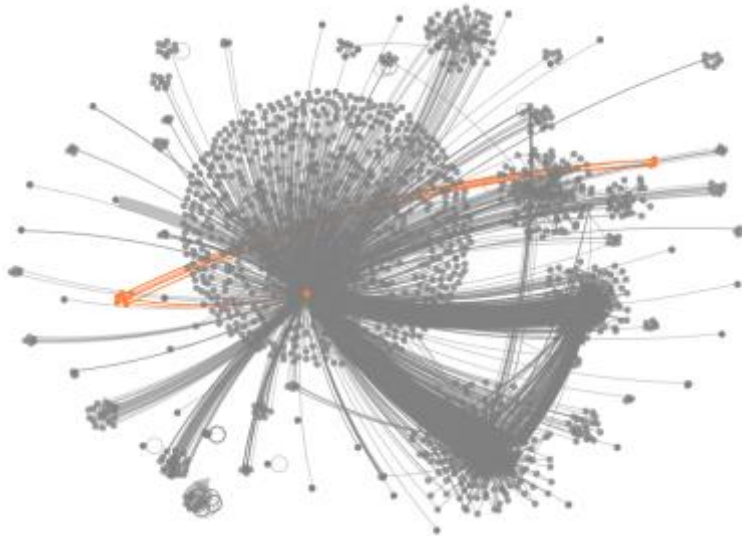
The most persistent path in the laopinionla pre-automation network, visualized
in the social network graph, highlighted in orange. Created by the author.

The topography of the CIT reveals a divided cluster lacking a distinct central node.

Looking at the conversation of interest (highlighted in orange in Figure 6.5), the Twitter handles mentioned in the CIT are not institutional names, but the names of sports broadcasters who tweet under their own names in a professional capacity. For example, @0scar0lvera addresses @RedesESPN, but, interestingly, not @espndeportes, which is the official Twitter handle for ESPN Sports in Spanish. The conversation involves individuals, rather than corporate entities, which results in a small cluster of people chiming in on the discussion. In addition, two of the participating individuals are otherwise disconnected from the primary cluster, denoting a tangential commentary related to the historical context of the sports broadcasters' reporting behavior. The only mention of @laopinionla comes from @nickjim07 as a point of historical reference; it does not serve the purpose of calling for the attention of a news authority. Recall from Chapter 2 that past/present time orientated cultures deploy historical context to establish the absolute nature of phenomena, by providing a track record of good or evil behavior. Of course, a history of consistent fulfillment of expectations engenders trust.

Communication theorists have studied trust and mass media. "The depiction of social reality through mass media cultivates a perception of the world as a mean place, where no one can be trusted; in the mass-mediated world of murder and violence, individuals do not participate in their communities and do not trust one another" (Dutta-Bergman, 2006, p. 469). While social capital and trust are diminished by use of the internet for entertainment, researchers taking a functional perspective of media consumption find that informational uses of the internet bolster the production of social capital (Dutta-Bergman, 2006). The attitude with which @0scar0lvera addresses the sports commentators reflects not only his culturally ingrained belief in the right to voice his opinion (relationships are not based on status), but also his culturally shaped assumptions about Twitter etiquette and his past/present oriented expectation of immediacy. His

tweets diminish his social capital on Twitter, due to his failure to understand how Twitter works and why he is being ignored. Conversely, the interjection of historical perspective increases @nickjim07's social capital in the @laopinionla community.

The topology of the CIT (Figure 6.6) is a mesh network, which also sheds light on the dynamics of the CIT path. Again, recall that topological analysis entails making inferences about the flow of information among nodes, regardless of the strength and distance of the relationship. The role played by @laopinionla is passive, only added as a mention at the tail end of the conversation.

Figure 6.6 LO_CIT_A1 Topology, Pre-Automation
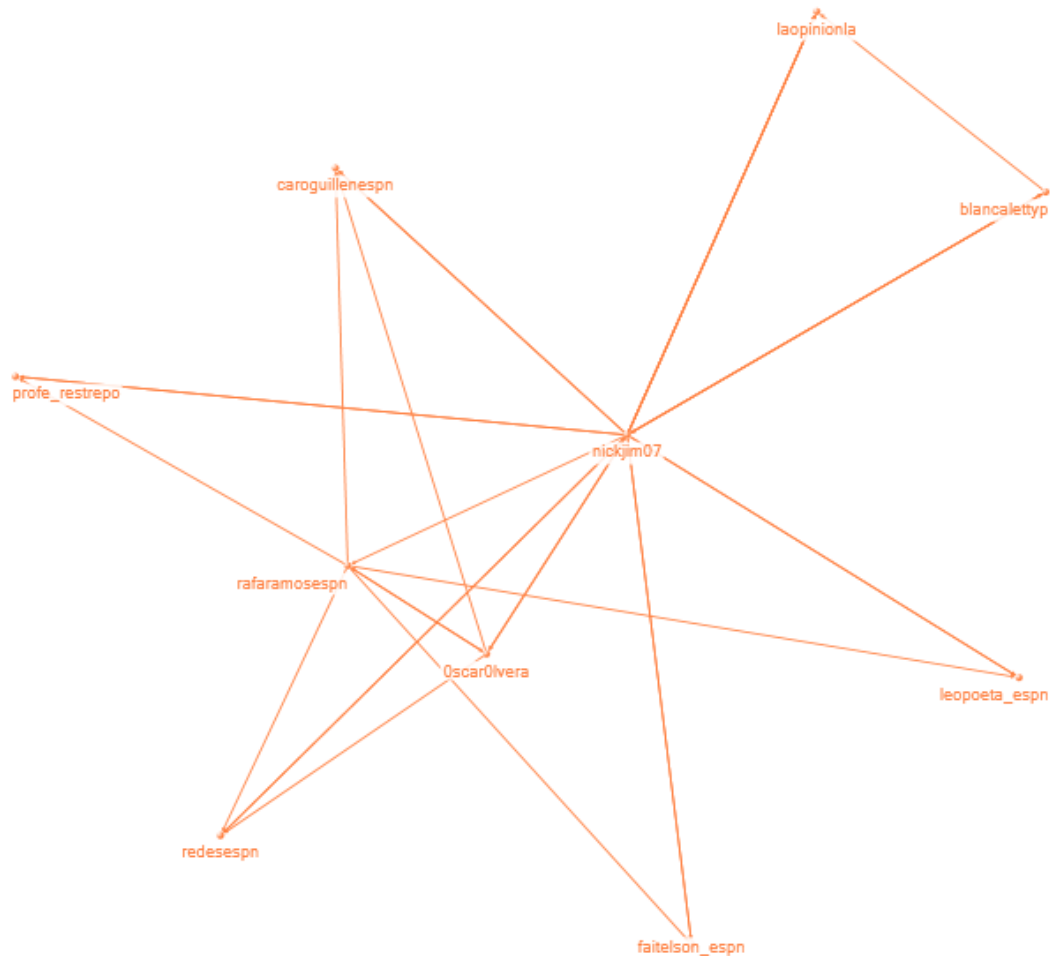
The topology of LO_CIT_A1 is a mesh network, in which each node is connected to at least one other node in the network. Created by the author.

The path is also temporally salient; the original tweet has a temporal salience score of

15%, relatively high compared to the other CITs, owing to its use of the term *nunca,* which

means never. In English, this would connote absolute judgment. It must be noted, however, that

double negatives are part of the Spanish syntax. This means that the relative weight of the

temporality of the term *nunca* must be adjusted if it is interpreted according to English grammar.

In the Interpretation phase of the TAFIP, it was important to tease out the relative importance of

the temporal term in the tweet.

Though the most persistent path in the laopinionla pre-automation network concerns

sports, consistent with a past/present time orientation, the topics mentioned most frequently

throughout the network pertain to immigration. As shown in Figure 6.7, a comparison of the pre-

automation topics of articles appearing in *La Opinión* to the top hashtags in the laopinionla

Twitter network reveals a stark difference.

The newspaper articles published during the pre-automation period cover a range of

topics, including religion, health, politics, poverty, and sports. In contrast, nearly all of the top

Figure 6.7 laopinionla Comparing News Coverage, Pre-Automation
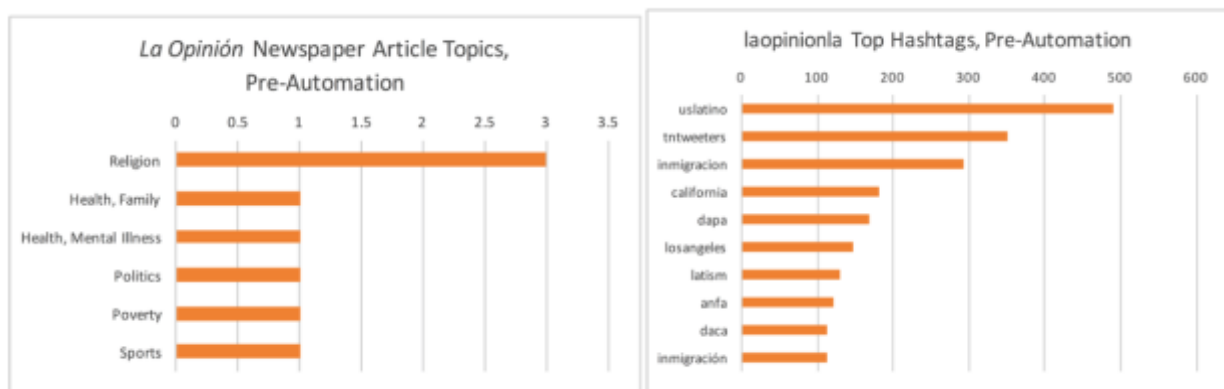
Most of the top hashtags in the laopinionla pre-automation network pertain to immigration policy and status. Created by the author; compiled from Factiva, laopinionla.com, ProQuest, and Twitter.

hashtags in the laopinionla pre-automation network pertain to immigration policy and status. The

most frequent hashtag, #uslatino, concerns the Latino population in the United States. During the

pre-automation period, tweets with this hashtag indicate that immigration is a topic of great interest among Latinos in the United States. Similarly, the #TNTweeters feed is populated with news about immigration reform. This hashtag is notable because it was started by a loosely organized group of around 200 Twitter users in a campaign to hold Congress accountable for forcing a vote on the Democrats' HR15 Immigration Bill in 2014. Some members say the group comprises immigrants located around the world. It remains unclear whether the "TN" in #TNTweeters represents the state of Tennessee, where one undocumented immigrant described his membership and the online nature of the network's relationships (Gamboa, 2014).

Though the hashtag predated Trump's presidential election campaign by more than a year, the term seems to be deployed along with a handful of other hashtags of interest to the U. S. Latino population as a matter of course in tweets about Trump's immigration policy (e.g., #uslatinos, #unitedblue). This "co-hashing" results in a slight change in the meaning of the hashtag over time—from a distinct campaign to pressure members of Congress to a broadly applied signal for tweets of importance to U. S. Latinos. This change in meaning is significant, because it represents the evolution of a rather ambiguous symbol from a targeted hashtag campaign to an authoritative information signal for those concerned with issues of timely relevance to U. S. Latinos in general. Given the immediate implications of possible changes in immigration policy, this co-hashing practice contributes to the news alert function of the Twitter platform. As such, the laopinionla pre-automation network exhibits a past/present time orientation, consistent with the cultural time orientation designation described in Chapter 2.

This evolution in the meaning of a hashtag is an unusual example of how Twitter hashtags may have a variety of meanings in culturally distinct networks. A more common pattern occurs when an acronym-based hashtag is used by members of disparate groups or networks to

represent more than one entity or sentiment. For example, #ANFA is among the top hashtags in the laopinionla pre-automation network as a result of its varied use. The hashtag is employed to publicize results of a popular soccer league; a real estate development project in Morocco; and the story of a young girl named Anfa, who was separated from her family due to conflicting information about her immigration status. Other acronyms in the laopinionla top hashtag list include #DAPA, referring to former President Obama's immigration executive order, Deferred Action for Parents of Americans and Lawful Permanent Residents; and #DACA, the U. S. guidelines for Consideration of Deferred Action for Childhood Arrivals. Finally, tweets by and for Latinos in Tech Innovation and Social Media appear in the #latsim feed. During the pre-automation period, a majority of the tweets under this hashtag also concern immigration, indicating that Twitter users who identify with this designation are active in the discourse on immigration.

6.2 Post-Automation

The uncertainty surrounding immigration policy in light of statements made by U. S. presidential candidates in 2016 created a sense of crisis within the Latino community in Los Angeles. Following the immigration reforms enacted during Barack Obama's presidency (which included registering on state and federal lists), shocking threats of deportation and the "promised" construction of a physical wall along the U. S.-Mexico border sent the community into high alert. While television has been a primary source of news for Latinos in Los Angeles (Ball-Rokeach et al., 2009), the community rapidly embraced social media technology as a primary source of news and alerts over the past several years (Duggan et al., 2015). *La Opinión's* Facebook audience is larger and more active than its Twitter readership; however, more than 38,400 users are followers of the *La Opinión* Twitter feed and Mexico is the third-largest Twitter

population in the world, with 23.5 million users in 2016 (Emarketer, 2016). As the long-standing news authority of this immigrant community, *La Opinión's* coverage of politics is expected to embody the Fourth Estate responsibilities associated with a democratic republic.

This authoritative role is visible in the laopinionla post-automation social network graph, shown in Figure 6.8. Like the pre-automation network, the graph resembles a solar system, with a large community clustered around the @laopinionla central node and about 70 smaller communities in orbit around it. Most of these satellites are small community clusters or support networks centered on other news agencies. These satellites are infrequently connected, as well, giving peripheral nodes increased control over the flow of information through the network. The most persistent path in the laopinionla post-automation network (LO_CIT_P1) represents a conversation about Gary Johnson's suitability as a presidential candidate (see Figures 6.9, 6.10, and 6.11).

Figure 6.8 laopinionla Social Network Graph, Post-Automation
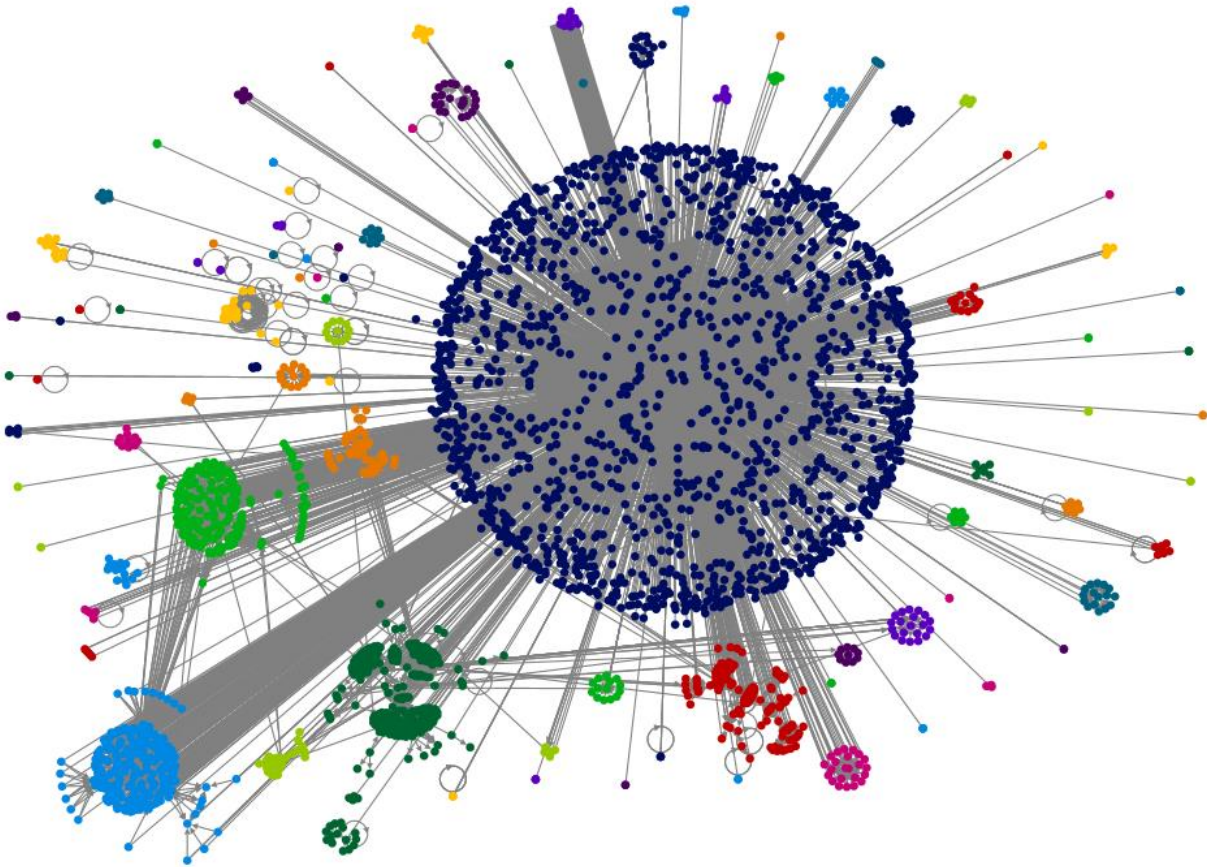
The laopinionla post-automation social network graph represents 4,225 Twitter users whose tweets contained *laopinionla*, or who were replied to or mentioned in those tweets. The tweets in the network were tweeted over the 29-day, 23-hour, 40-minute period from Thursday, September 15, 2016, at 00:00 UTC, to Friday, September 30, 2016, at 23:41 UTC. Additional tweets that were mentioned in this dataset were also collected from prior time periods. The graph is directed, and its vertexes were grouped by cluster using the Clauset-Newman-Moore cluster algorithm. The graph was laid out using the Harel-Koren Fast Multiscale layout algorithm. Created by the author using NodeXL Pro.

Figure 6.9 laopinionla Informetric Network Graph, Post-Automation

LO_CIT_P1

LO_CIT_P2

The most persistent paths in the laopinionla post-automation network diffuse through six generations. LO_CIT_P1 has a more complex structure than LO_CIT_P2. Created by the author.

Figure 6.10 laopinionla CIT (LO_CIT_P1), Post-Automation

The first CIT in the laopinionla network in the post-automation period is a complex, persistent path in which Gary Johnson calls himself the voice of reason. Created by the author.

Figure 6.11 laopinionla CIT (LO_CIT_P1), Post-Automation

LO_CIT_P1 is a tweet quoting a speech by presidential candidate
Gary Johnson. An alternate translation is "I am the voice of reason."
Source: Twitter.

Though Bing translates the text of LO_CIT_P1 as "I am the voice of sanity," there is a

superior translation: "I am the voice of reason." This distinction is important, because reason

implies "correct" decision making as determined by the society. As described previously, socio-

cultural expectations exert significant influence on how information is recognized, perceived,

and managed at each stage of the TAFIP. When dealing with news organizations, which have a

Fourth Estate responsibility in America, the importance of reliability and accuracy in reporting

becomes political.

The tweet topic also reflects the status of *La Opinión* as a news authority for the Latino

community seeking a "voice of reason." As shown in Figure 6.11, the tweet uses a large photo to

draw attention; tweets with photos are three to four times more likely to attract reader attention. The text is in Spanish, and uses a phrase associated with level-headed, thoughtful decision making.

La Opinión endorsed Hilary Clinton for the 2016 presidential election. However, the news organization also ran the story that forms the basis of LO_CIT_P1, suggesting an effort to present balanced reporting on the candidates. The news article to which the tweet is linked is an interview with Gary Johnson, which highlights his position that immigration reform under his guidance would include a path to citizenship—an important temporal feature of any immigration policy in the best interest of the Latino community. The interview does not present an opinion about Johnson's suitability, instead providing the interview responses for voter deliberation.

To examine the discussion arising from the tweet, I considered the topography of the CIT path within the social network graph, as shown in Figure 6.12. Though @laopinionla figures prominently in the visualization as a result of its high in-degree centrality, the substantive engagement in the CIT path occurs on the fringe in a small cluster that represents four generations of the tweet during the post-automation time period. As in the pre-automation period, the role of @laopinionla in the network is relatively passive. This observation is confirmed by the node's imbalanced ratio of in- to out-degree centrality: 2121:14. This means that, for every tweet emanating from @laopinionla, its handle appears in about 150 tweets (as mentions, replies, and quoted tweets).

Figure 6.12 laopinionla LO_CIT_P1, Post-Automation
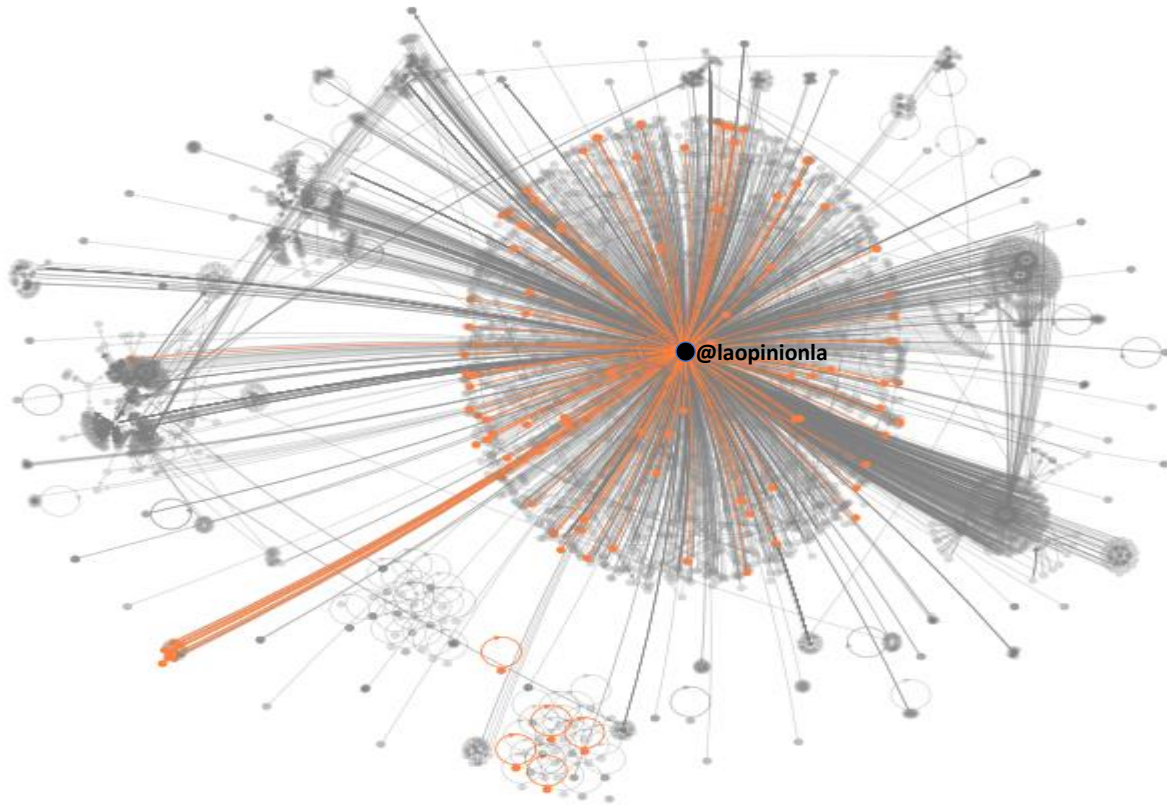
Although @laopinionla sits at the center of much retweet activity, it is peripheral to the conversation.

The topography of the CIT, depicted in Figure 6.12, provides an excellent example of an important difference between key performance indicators (KPIs) used to analyze information diffusion in Twitter networks. While likes and retweets remain the KPIs of choice among many practitioners with the common goal of reaching more customers and/or reaching specific types of customers, they are measures that offer little insight into *effortful* Twitter engagement. The small cluster of individuals in the southwest quadrant of the graph is the site of such engagement in the persistent path of LO_CIT_P1. The star-like central cluster of the social network graph is populated primarily by retweets. Examination of the CIT topology, as shown in Figure 6.13, reveals the passive role of the @laopinionla node and the instrumentality of peripheral nodes in the persistent path, suggesting a focus on measures other than retweets may be more helpful to those seeking insight into persistent cultural attributes like time orientation.

Figure 6.13 laopinionla Topology, Post-Automation
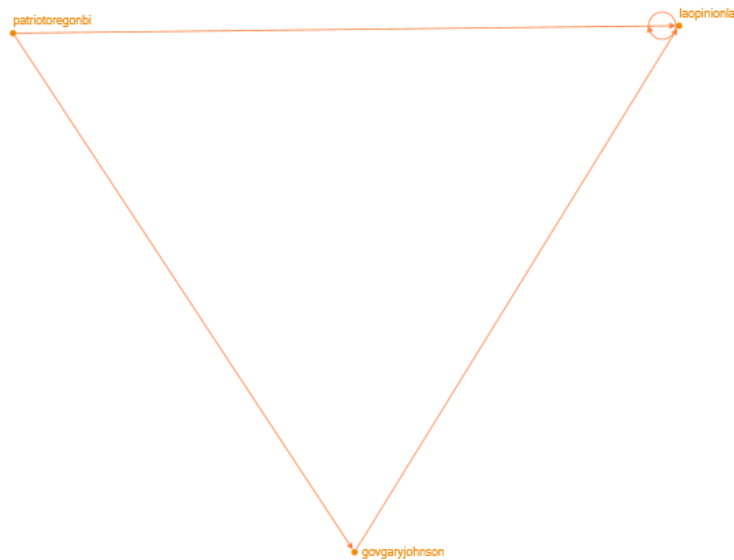
The topology of the LO_CIT_P1 persistent path reveals the instrumentality of seemingly peripheral nodes. Created by the author.

Politics is the general topic of the persistent path in the laopinionla post-automation network, consistent with the topics of both the news articles published by *La Opinión* and the top Twitter hashtags in the network, as shown in Figure 6.14. The prominence of immigration as a focus of political interest among the Mexican-American readership can be seen in both topic sets. Immigration ranks highest on the list of news article topics; the top hashtags also reflect its prominence, both as a direct term and in the form of specialized campaigns pertaining to immigration, such as #theyarechildren and #womencanstoptrump. However, there are also several top hashtags that address looming socio-political issues in Latin America, such as kidnapping (#secuestro) and corruption (#renunciaya). Interestingly, the #otd hashtag, which stands for "on this date," is used to commemorate historical events and appears third on the list of top hashtags in the laopinionla post-automation network. The temporal hashtag #otd is a means of bringing the past into the present. Further examination of the content of tweets using this hashtag (outside the scope of the present study) may provide insight into cultural time orientation. Finally, the topics of news articles published by *La Opinión* and the top hashtags in the laopinionla Twitter network during the post-automation period are more closely aligned than in the pre-automation

timeframe, perhaps as a result of the manner in which tweets are automated now that the Twitter feed is produced using Echobox.

Figure 6.14 laopinionla News Article Topics and Top Hashtags, Post-Automation
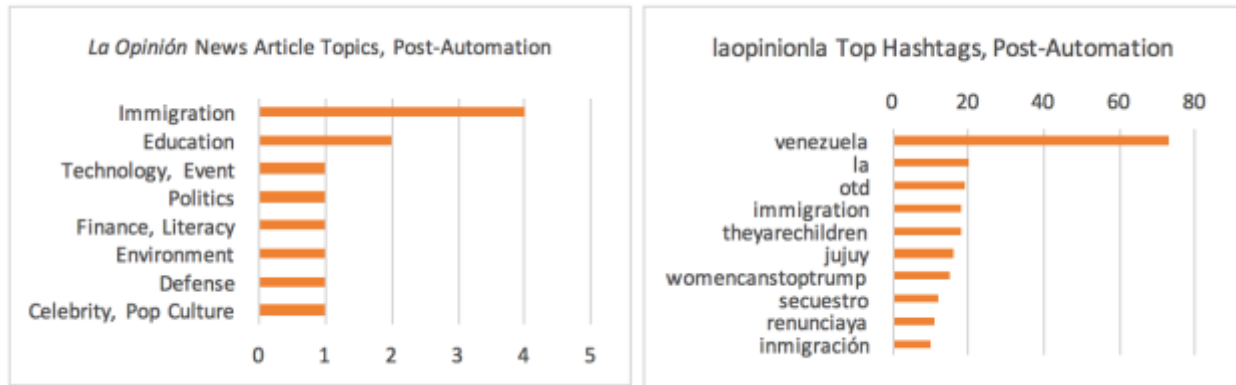
Comparison of the topics of newspaper articles published by *La Opinión* and the top Twitter hashtags in the laopinionla post-automation network. Created by the author; compiled from laopinion.com, ProQuest, and Twitter.

The CIT provides a fascinating look at how the Latino-American community in Los Angeles looks to *La Opinión* as the authority for guidance on how to think about and deal with the many issues surrounding immigration. Part of this authoritative status may be related to the critical watchdog role played by American Journalism since the mid-20th century, which would be striking to immigrants from countries with a history of state-controlled media, like Mexico.

It is generally understood that democratic governments and the public are constrained by the reliability and accuracy of the information on which decisions are made (Schiller, 1996). Thus, public opinion is, at its core, an integration of reported conditions that exist outside the common experience. "Inevitably our opinions cover a bigger space, a longer reach of time, a greater number of things, than we can directly observe. They have, therefore, to be pieced together out of what others have reported and what we can imagine" (Lippmann, 1922, p. 53). The role of American Journalism in the facilitation of the public's reasoned and rational decision making (Chambers & Costain, 2001) is rooted in resistance to government control and manifest in gatekeeping and reporting practices that enact codes of ethics that elaborate on the First

Amendment, and which have been held sacrosanct by most American journalists and news organizations, at least until recently. "[T]he press is the chief means of contact with the unseen environment. And practically everywhere it is assumed that the press should do spontaneously for us what primitive democracy imagined each of us could do spontaneously for himself, that every day and twice a day it will present us with a true picture of all the outer world in which we are interested" (Lippmann, 1922, p. 206).

American Journalism is regarded as a model of systematic management of bias, accomplished by enacting a strict code of ethics, akin to the Hippocratic oath or the Pledge of Allegiance. "News coverage that provides truthful and comprehensive accounts of events fosters the conditions that societies need to thrive economically and politically. And accurate media coverage enables individuals to make sound judgments and gain control over their lives" (Gardner et al., 2002, pp. 125-126). As discussed in Chapter 2, news values act as decision rules for the news industry. The public expects to make sound decisions based on faithful recounting of events and communication of the myriad ways in which those events may affect the lives of the citizenry today, and in the future. Over time, news information practices that enact these decision rules become routine and come to symbolize the values associated with professional journalism. To appreciate the reality of today's media climate, first recall the evolution of the news media as a critical watchdog advocate for the American public; this is necessary context for understanding pubic opinion about the role of the news media, especially in light of recent changes in news organizations' information practice.

The practice of journalism in America began with highly partisan editorial publications critical of the British government. The establishment of a free press in the United States finds one of its strongest catalysts in the outcome of a 1735 libel case against John Peter Zenger,

printer of the New York Weekly Journal. At issue were articles criticizing the New York

Governor William Cosby for dismissing a judge who had refused to hear a case in which Cosby

sought to recover salary paid to an ad hoc interim governor. Zenger's attorney, Andrew

Hamilton, delivered an eloquent defense based on the right of those accused of libel to

demonstrate the truth of the information. Zenger was acquitted, and the jury's disregard for the

judge's instructions to consider only whether Zenger had printed the material in question (which

he had admitted openly) signaled a shift in public opinion about colonial rule and political abuse

of power. The trial and ruling planted the seeds for an emphasis on freedom of expression in the

Constitution and the Bill of Rights. Hamilton's closing appeal to the jury emphasized the

enormity of their decision:

> "The question before the Court and you, Gentlemen of the jury, is
> not of small or private concern. It is not the cause of one poor
> printer, nor of New York alone, which you are now trying. No! It
> may in its consequence affect every free man that lives under a
> British government on the main of America. It is the best cause. It
> is the cause of liberty" (Zenger, 1738).

The Zenger case is an apt introduction to a long history of American Journalism's

contribution to democracy, particularly because the points of debate—whether the press is

entitled to share with the court of public opinion information that is critical of the actions of

people in positions of power—are points of contention in contemporary discourse on regulation

and moderation of information published on the internet. Founding Father Gouverneur Morris

called the Zenger trial "the germ of American freedom—the morning star of that liberty which

subsequently revolutionized America" (Lossing, 1999).

Immigrants in America historically have looked to community newspapers for

information of interest to specific cultural audiences, as well as for key news that is in the

interest of the community. They rely on news organizations to separate wheat from chaff, and present the news from a culturally informed perspective.

Since the revelations about the influence of "fake news" on the 2016 U. S. presidential election, news organizations' authority has been called into question, as has the public's ability to access political information deemed adequate for making well-informed political decisions. Most importantly, blame for unreliable, inaccurate, or biased news coverage often is directed at technological innovation, rather than the individuals who control the flow of information or the algorithms that replace them.

Chapter 7: Journalism's Algorithmic Turn and Systematic Bias
in the *Los Angeles Times* Network

The most enduring tweets in the latimes pre- and post-automation networks demonstrate the absolute judgment with which American Twitter users embrace or reject others' political perspectives, which is characteristic of past/present time oriented cultures.

7.1 Pre-Automation

In the pre-automation period, the latimes social network graph (shown in Figure 7.1) centers on the @latimes vertex and the longest paths in the latimes pre-automation network (shown in Figure 7.2) concern political opinion. The most enduring latimes path is an unusual chain of posts by an individual called PeanutButter&Jelly, whose handle is @shurig_. It appears that @shurig_ periodically posts links to videos about the 9/11 terrorist attack, along with denunciations of George H. W. Bush and other political figures. The poster replies to his own tweets with additional Twitter handles, including @enews, @cnnent, @MTV, @foxtv, @FOXNews, @VH1, @ETnow, @latimes, @nytimes, @USAToday, @ABC, @UN, @theslystallone, @schwarzenegger, and @USMC.

Figure 7.1 latimes Social Network Graph, Pre-Automation
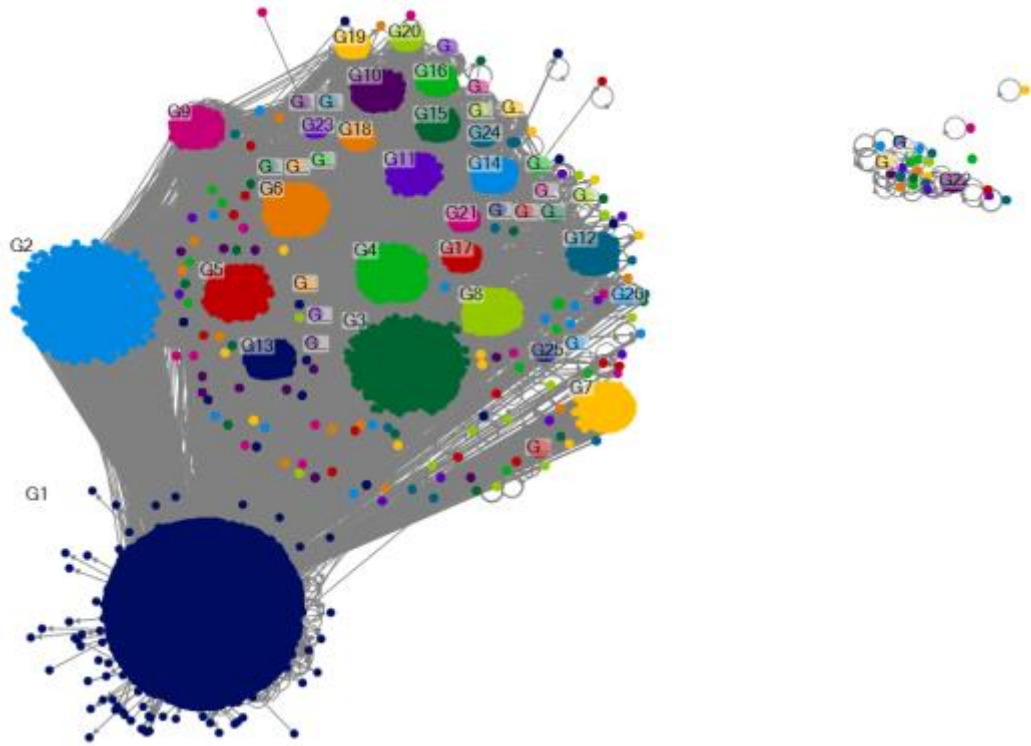
The latimes graph represents a network of 42,039 Twitter users whose tweets contained *latimes,* or who were replied to or mentioned in those tweets. The tweets in the network were tweeted over the 16-day, 23-hour, 56-minute period from Friday, March 20, 2015, at 00:01 UTC to Sunday, April 5, 2015, at 23:57 UTC. The graph is directed, and its vertexes were grouped by cluster using the Wakita-Tsurumi cluster algorithm. The graph was laid out using the Fruchterman-Reingold layout algorithm. Created by the author using NodeXL Pro.

This practice is used to attract the attention of specific people and organizations, particularly those nodes with large followings. Such nodes are called influencers, and may be identified statistically by high Eigenvector centrality, because the metric accounts for the relative strength of a node's connections, as well as its potential secondary audience. Thus, Eigenvector centrality can be thought of as a possible measure of adoption and exposure.

Some of @shurig_'s tweets threatened singer Britney Spears in February 2015, and others contain links to videos about a new world order. Some of these tweets and videos have been removed by Twitter and YouTube, respectively, likely due to terms-of-service violations. It also seems that @shurig_ was removed from the Twitter platform as of April 22, 2015. This is useful information pertaining to Twitter's takedown practices and may be instructive for

developing improved means of screening for threats. Twitter's terms of service ban "direct, specific threats of violence against others;" the platform has followed YouTube's lead in removing accounts that violate such terms of service, including many tied to the Islamic State terror group. Unfortunately, this user has three other accounts on Twitter with more recent activity, including threats to political figures and celebrities, as well as videos of @shurig_ masturbating both to "perform" for celebrities like Britney Spears and to denounce terrorists for attacks on America. (At the conclusion of this study, I will alert Twitter to these accounts.)

Since this path is extraordinarily inflammatory, I also analyzed the second-longest path in the network. This path, labeled LA_CIT_A2 in Figure 7.2, and shown in Figure 7.3, is a subset of a debate on the nature of American political philosophy. Over time, the conversation devolves into attacks and refutations on closed-mindedness in academia and the media.

Figure 7.2 latimes Informetric Network Graph, Pre-Automation

LA_CIT_A2

LA_CIT_A1

The most enduring tweets in the network are labeled LA_CIT_A1 and LA_CIT_A2. Created by the author using NodeXL Pro.

Figure 7.3 latimes CIT (LA_CIT_A2), Pre-Automation

One of the CITs in the latimes pre-automation network is a conversation
about political philosophy. Source: Twitter.

LA_CIT_A2's topology, shown in Figure 7.4, is a 49-generation linear network, which

means information flows unidirectionally at any point in time, and that it is prone to interruption.

Figure 7.4 Additional latimes Persistent Tweet (LA_CIT_A2), Pre-Automation
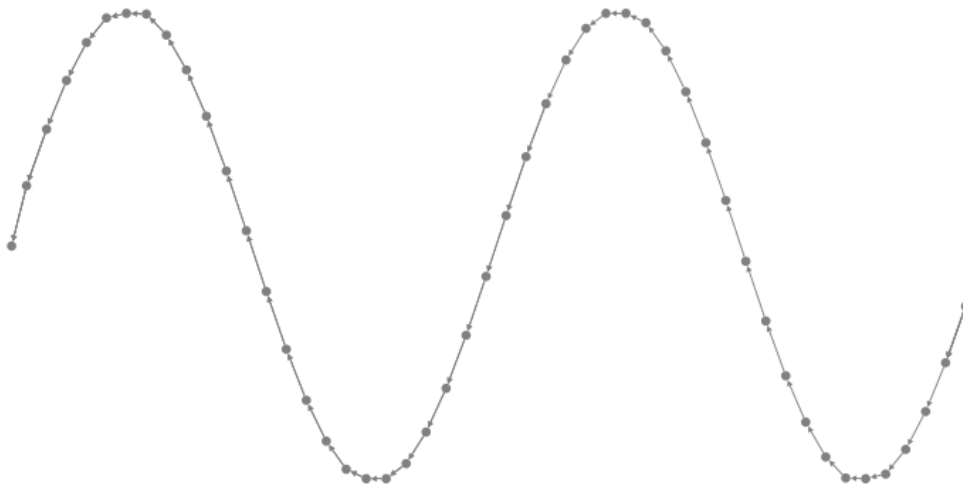
LA_CIT_A2, shown here in a horizontal sine layout, is a 49-generation linear topology. Created by the author.

A lack of alignment between the topics of the tweets and hashtags in the latimes pre-

automation network and the topics of news articles published by the *Los Angeles Times* during

the same time period reveals differences in prioritization on the part of the social media managers.

Figure 7.5 Los Angeles Times News Article Topics
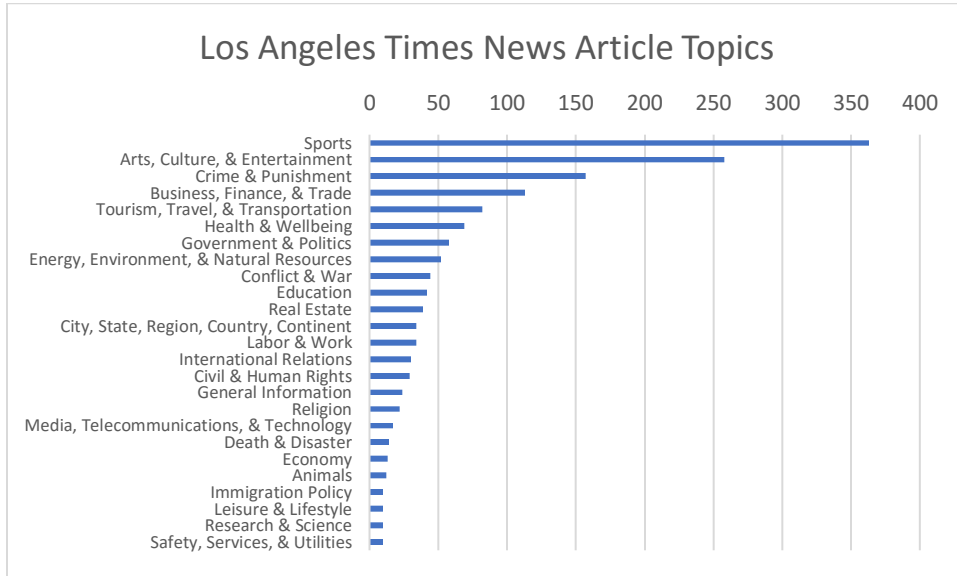
Sports and leisure news items make up a large proportion of the Los Angeles Times news article topics, followed by crime and business. Created by the author with data compiled from ProQuest and the *Los Angeles Times.*

7.2 Post-Automation

The latimes post-automation social network graph features about 30 hearty community clusters radiating from a central, haloed broadcast cluster emanating from the @latimes node, as shown in Figure 7.6.

Figure 7.6 latimes Social Network Graph, Post-Automation
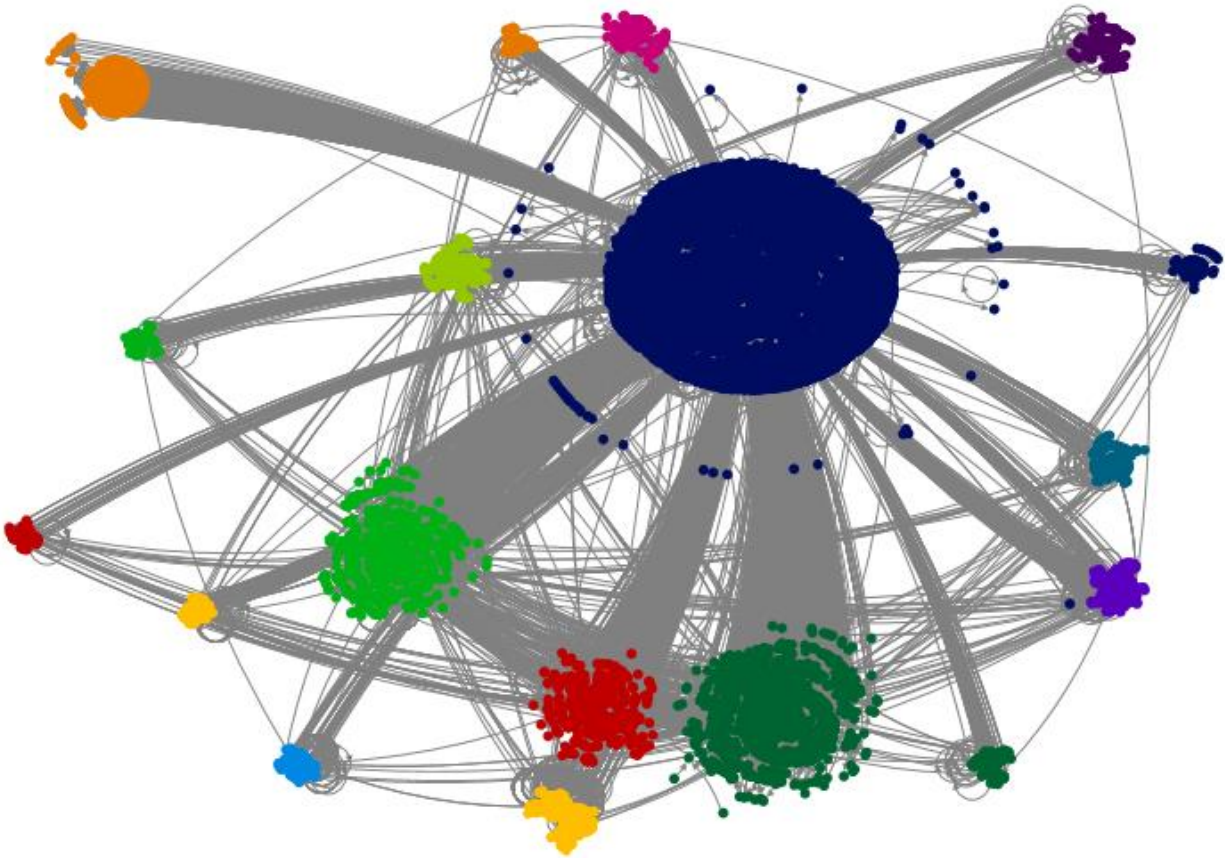
The latimes post-automation social network graph represents 12,125 Twitter users whose tweets contained *latimes,* or who were replied to or mentioned in those tweets. The tweets in the network were tweeted over the 15-day, 23-hour, 56-minute period from Thursday, September 15, 2016, at 00:01 UTC to Friday, September 30, 2016, at 23:57 UTC. Additional tweets that were mentioned in this dataset were also collected from prior time periods. The graph is directed, and its vertexes were grouped by cluster using the Wakita-Tsurumi algorithm. The graph was laid out using the Harel-Koren Fast Multiscale layout algorithm. Smaller groups are not visible in this rendering. Created by the author using NodeXL Pro. Smaller clusters were removed for visual clarity.

I analyzed several tweet paths in the latimes post-automation network, many of which also originated with tweets containing multiple handle mentions using quoted status posts. Most of the paths that extend beyond two generations are political in nature. For example, the conversation depicted in Figure 7.7 begins with an expression of defiance. The community member, who calls herself Propane Jane, engages in a lengthy discussion about sexism and misogyny in political media campaigns. Her posts are emotional and wry in their commentary on current political debates in the United States. Over time, Propane Jane has acquired a following

on Twitter, indicating she is considered a source worthy of the readership's attention.

Figure 7.7 latimes Persistent Tweet (LA_CIT_P2), Post-Automation

LA_CIT_P1 perpetuates through a combination of self-retweeting and hashtags. Source: Twitter.

I also analyzed a shorter, yet more complex, path in the network. An @latimes tweet about the Keith Lamont Scott case provoked a large number of replies expressing outrage directed toward *Los Angeles Times*. Though the tweet conversations emanating from LA_CIT_P2 persist through fewer generations than the other CITs examined in the network, the CIT is notable for its unusual ability to spawn numerous conversation threads, as shown in Figure 7.8. Recall that persistence beyond two generations is extremely rare; at least 33 conversation threads stemming from LA_CIT_P2 persist through three generations.

Figure 7.8 Complex, Persistent latimes Tweet (LA_CIT_P3), Post-Automation
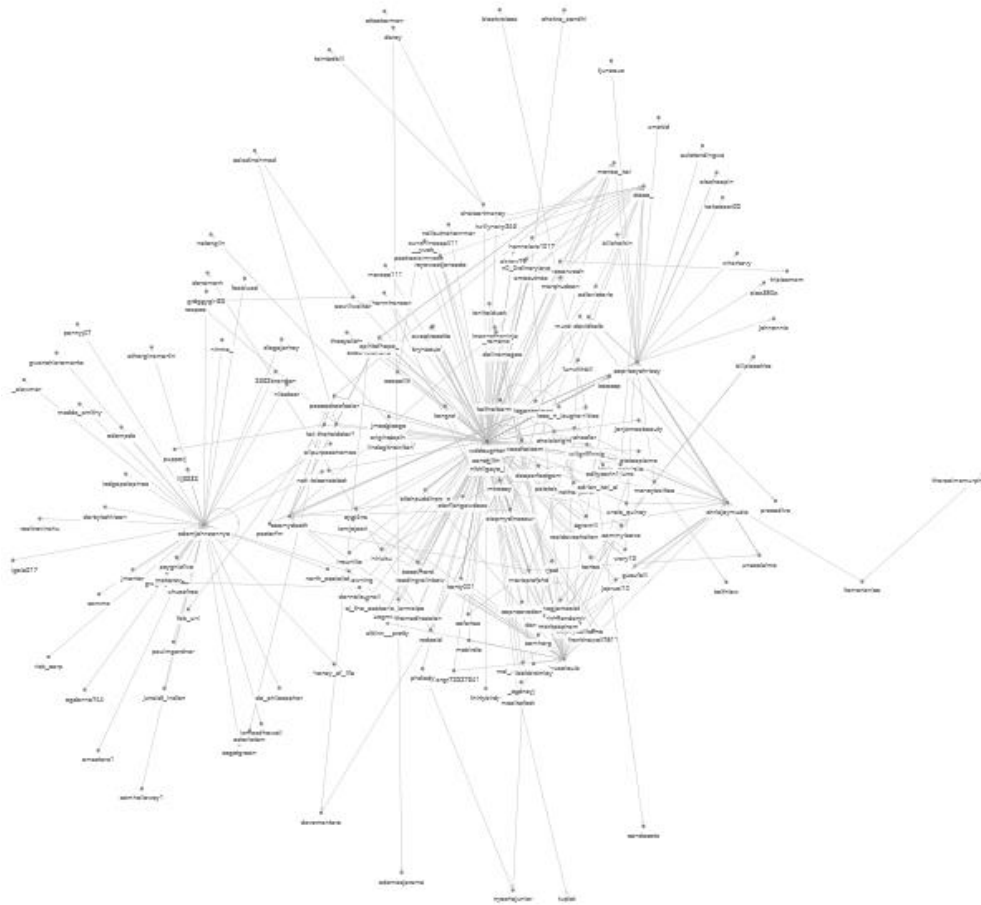
LA_CIT_P3 is notable for the relatively high number of persistent conversations originating from a single node. Created manually by the author (top) and using NodeXL Pro (bottom).

LA_CIT_P3 contains a hyperlink to a news article on latimes.com. Shown in Figure 7.9, the CIT opens with a large headline, followed by an image depicting a couple on the left, and a teaser of the hyperlinked news article on the right. Note that the tweet headline differs from the article headline.

Figure 7.9 LA_CIT_P3

The automated CIT that evokes severe criticism of @latimes during the post-automation period. Note: This image is a composite of versions captured by the author and preserved in the Internet Archive to represent the original tweet from @latimes.

In the persistent paths originating from the CIT, readers criticized @latimes for justifying police killings of black men, emphasizing the journalistic failure to represent the news in a balanced manner and the systemic discrimination to which the mainstream media is a party. Immediately, the past/present time orientation emphasis on living in the moment resonates in the vehement tweets insisting that Scott's past is irrelevant to the decision made by police officers to shoot him.

Figure 7.10 LA_CIT_P3 in Social Network Graph, Post-Automation
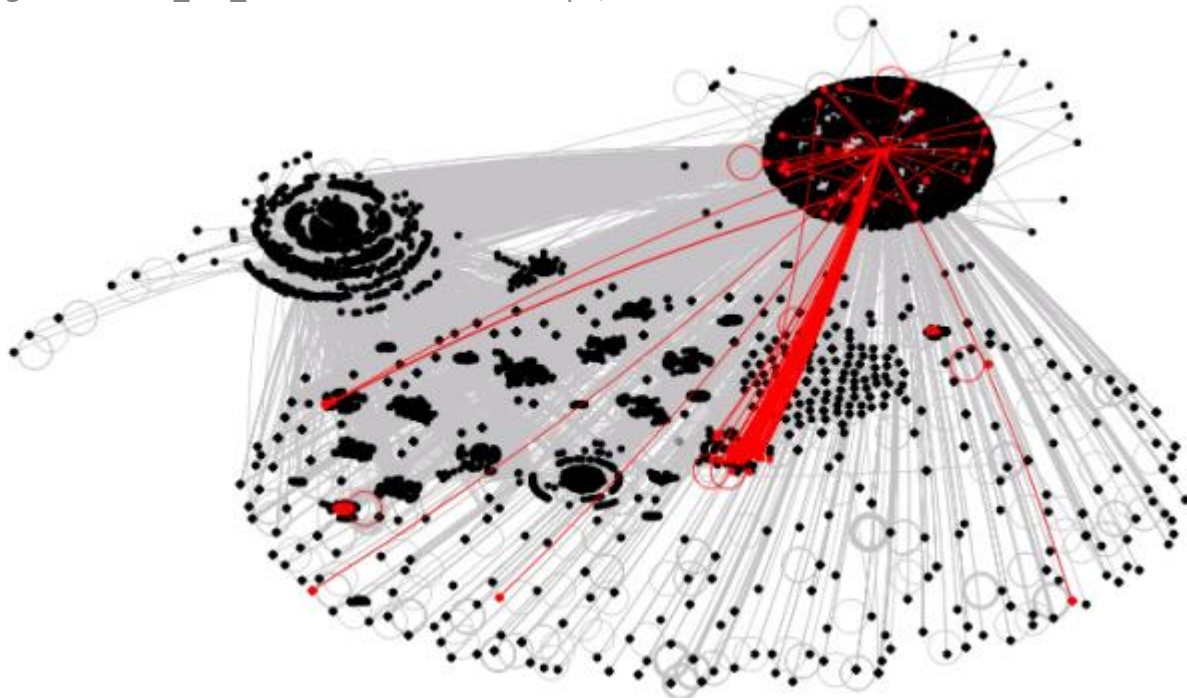
LA_CIT_P3 travels through many of the network's clusters. Created by the author.

In Figure 7.10, the cluster surrounding the Keith Scott tweet gives the appearance of a broadcast or support network in the Himmelboim typology, but that classification does not convey properly the relationships among the network members and tweets. This finding suggests the category should be expanded to include public commentary in addition to requests for support and news distribution.

The CIT was distributed to Twitter using HootSuite, a third-party social media management platform. Perhaps, were the @latimes Twitter feeds being managed actively, a social media manager would have either defused the situation quickly, or removed the tweet altogether in response to negative feedback. Reflecting the diminishing social capital resulting from the CIT, some replies call out the @latimes Twitter account manager, highlighting how this persistent negative CIT could have been contained and the reputation damage mitigated (see Figure 7.11).

Figure 7.11 Diminishing Social Capital as a Result of Automation

Some critiques of LA_CIT_P3 make specific mention of the @latimes account manager. Source: Twitter.

The overarching theme of this case in terms of cultural time orientation and information

practice relates to the role of trust in journalism and the risks of automated evaluation and

prioritization of news for distribution via social media, particularly in light of prevalent live

streaming video and user-generated content. A related theme is the expectation for instantaneous

response and correction, which stems from technological innovation and a past/present time

orientation. To illustrate the dramatic effects that live streaming video has had on public opinion,

it is instructive to examine how prior technological innovation contributed to gradually changing

expectations for news reporting.

During the Civil War, American news organizations began to integrate new technology

such as photography and telegraphy into their information practice. Photojournalism added a sense of realism to news reports, conveying the brutality of the war through images that evoked visceral reactions among the American public; photographic portraiture opened the floodgates of publicity and celebrity; and telegraphy made it possible to report from the field and to share news content among publishers.

Often called the Father of Photojournalism, Mathew Brady set out to document the Civil War with new daguerreotype technology, mobile darkrooms, and a team of hired photographers. Though they could not be taken during battle due to the length of time it took to capture a single exposure, many of the most telling photographs depicted the grisly aftermath of battles on the field. (See Figure 7.12.) Brady's October 1862 New York exhibition, "The Dead of Antietam," was the first public photographic presentation of America at war. "The public viewed painfully explicit photographs with unconditioned eyes—the first time America visually confronted the carnage of its conflict" (Wallace, 2012). *The New York Times* lauded the exhibition, explaining the power of the photographs to "bring home to us the terrible reality and earnestness of war. If he has not brought bodies and laid them in our door-yards and along streets, he has done something very like it" (New York Times, 1862).

Newspapers quickly embraced the format, supplementing written articles with images. "Photography complemented—and competed with—old discursive methods of verbal description by bringing a visceral immediacy to an audience avid for images. Photographic images became the connective tissue binding the home front to the combat zone" (Covkin, 2015). One of Brady's photographers, Alexander Gardner, described the advantages of photojournalism: "Verbal representations of such places, or scenes, may or may not have the merit of accuracy; but photographic presentments of them will be accepted by posterity with an

undoubting faith." (Gardner, 1865). Oliver Wendell Holmes described the experience of viewing

the exhibition: "It was so nearly like visiting the battlefield to look over these views, that all the

emotions excited by the actual sight of the stained and sordid scene, strewed with rags and

wrecks, came back to us, and we buried them in the recesses of our cabinet as we would have

buried the mutilated remains of the dead they too vividly represented" (Holmes, 1863). Even

though the American public was aware of the casualties of war, the brutality of the first-hand

experience did not become real for them until photographs from the field reached the populace.

In response to public shock at the horror of many of the photographs, Brady justified the

exhibition, saying, "[t]he camera is the eye of history" (Giesberg, 2015, p. 188). This perspective

led to the American public's adoption of photographs as the standard for capturing and

communicating reality. (For a detailed examination of the evolution of representations of reality,

see Daston & Gallison's *Objectivity*, 2007).

The shock with which the American public of the 1860s reacted to photographs of the

Antietam carnage can be compared to reactions to the video of Rodney King's beating by Los

Angeles Police Department officers in 1991, when consumer video cameras were introduced, or

the digital footage captured by citizens with mobile phones, which today often provide visceral

witness perspectives that run counter to government accounts of police activity. This footage

includes the killings of numerous unarmed African-American men in recent years, which

catalyzed the #BlackLivesMatter movement (Tate et al., 2016). "Black newspaper executives

feel the videos lend credibility not only to black victims' versions of events in specific situations,

but also to their versions of events historically. Where a victim's race could affect a story's

perceived veracity, video permits no such prejudice" (McLaughlin, 2015). Robert Bogle,

president and chief executive of the *Philadelphia Tribune*, explains that the combination of video

technology and social media networks creates the timeliness necessary for non-African Americans to take action. Until the instantaneity of social media could be leveraged for rapid distribution of bystander video footage, complaints about disproportionate use of force against African Americans by police "fell on deaf ears because no one wanted to believe some officers would act that way," explains Cedric Alexander, president of the National Organization of Black Law Enforcement Executives (McLaughlin, 2015).

Photojournalism not only enhanced the realism and authority of written news reports, but also expanded the diversity of the historical record. By exploring the Civil War photographs, we can identify witnesses whose experiences were not previously captured for inclusion in the American narrative. For example, the stereograph in Figure 7.13 depicts seven former slaves, who were employed as laborers by the Union Army. The description accompanying the image speaks volumes about the way whites thought about African Americans, but provides no insight as to the experiences and perspectives of the subjects of the stereograph; their experiences are missing from the historical record. In the years since the Civil War, several efforts to capture such excluded perspectives have included recordings of oral histories as part of the Federal Writers' Project of the Works Projects Administration (previously the Works Progress Administration). These initiatives attempt to improve the historical record with the inclusion of firsthand accounts of former slaves and their descendants. For example, *Born in Slavery: Slave Narratives from the Federal Writers' Project, 1936-1938* comprises 500 photographs of former slaves and more than 2,300 first-person accounts of slavery. This collection has been digitized and supplemented with additional photographs, and is available online from the Library of Congress (Federal Writers' Project, 2001).

Figure 7.12 Civil War Battlefield Photography

Left: Incidents of the War. A Harvest of Death. Gettysburg, July 1863.
Right: Bloody Lane Carnage, Antietam National Battlefield, 1865 .
Alexander Gardner/Library of Congress.

Figure 7.13 Civil War Stereograph

A group of "contrabands." Stereograph showing a group
of seven African-American men, former slaves, dressed in
old Union uniforms standing in front of a wagon and shack.
Library of Congress Prints and Photographs Division
Washington, D.C. 20540 USA.

While photojournalism changed the American public's expectations for true representations of reality, portrait photography enabled the manipulation of public opinion in terms of the perceived character and ability of prominent statesmen.

Yet another technology influenced the structure of news writing. Telegraphy was the internet of the 19th century. Suddenly, reporters could file stories from the field, and news organizations could share breaking news across vast distances. The telegraph enabled the rise of wire services like the Associated Press, which accelerated the diffusion of news internationally. *The Times of London* described the potential of the technology in 1858, shortly after the first telegraph messages were exchanged between U. S. President James Buchanan and England's Queen Victoria:

> "Tomorrow the hearts of the civilized world will beat in a single pulse, and from that time forth forevermore the continental divisions of the earth will, in a measure, lose those conditions of time and distance which now mark their relations" (Anderson, 2005).

But the fragile technology was not without its difficulties. Telegraph lines were unreliable, and failed frequently. For this reason, reporters and wire services prioritized the information to be included in their articles by transmitting the most important information first. This information practice became a journalistic standard: the inverted pyramid format.

The inverted pyramid—a brief, attention-grabbing, information-rich headline followed by a strong, informative, and concise lead paragraph with additional details presented in descending order of importance—stood up to the unpredictability of telegraph transmission, as news consumers became accustomed to the format over time. One may scan the headlines for a broad sense of the important issues, skim the lead paragraphs for major points of contention, and, time permitting, glean greater detail on issues of particular personal interest through a thorough read

of the article.

Today's reliance on algorithmic generation of news articles and headlines is reminiscent of the information practices of the mid-20th century, in which American Journalism's public advocacy role was questioned and yellow journalism arose. A hierarchical editorial structure operating in deference to government authority persisted at traditional American news organizations through the 1950s. Events of the next few decades, however, transformed American Journalism, as powerful people and organizations came under scrutiny by investigative reporters. Emboldened by regulations that held news organizations accountable for the public service obligations associated with Federal Communications Commission licensing, well-heeled, privately owned metropolitan newspapers like *The Washington Post* and *The New York Times* invested in investigative journalism (Downie & Schudson, 2009). Established in 1953, the Pulitzer Prize for Investigative Reporting honors print journalists for work that exposes injustice and brings about change to benefit the public interest. Interestingly, the prize's namesake, Joseph Pulitzer, was both an ardent advocate of truth-seeking journalistic ethics, and a shrewdly competitive businessman, whose marketing tactics and fierce competition with William Randolph Hearst contributed to the normalization of yellow journalism. "If a newspaper is to be of real service to the public, it must have a big circulation," explained Pulitzer, "because circulation means advertising, and advertising means money, and money means independence" (Whyte, 2009, p. 94).

The roots of yellow journalism can be found in Pulitzer's recognition that prominent newspapers catered to wealthy white society, to the exclusion of minority populations, including women and African Americans. Pulitzer entered the New York newspaper market with the *New York World*, setting the price at one penny, which made the publication more affordable for

under-served minorities. However, unlike many of the entertaining "penny press" publications, Pulitzer's *World* aimed to provide the public with investigative reporting and appropriate context. Noting, also, that his target market was pressed for time and consumers had many newspapers from which to choose, Pulitzer used various design and editorial techniques to pique customer interest. These innovations included banner headlines, sensationalist terminology, and copious use of imagery (Campbell, 2001). He was the first to incorporate a color process in newspaper printing with Hogan's Alley, a comic strip featuring a bald, buck-toothed child in a yellow nightshirt, who came to be known as the Yellow Kid (see Figure 7.14). The cartoon series offered satirical commentary on social issues, and became so wildly popular that Hearst poached the cartoonist to join his *Journal.* Pulitzer hired another artist to continue the series for the *World,* and the two cartoon series soon symbolized the fierce competition between Pulitzer and Hearst. Critiques of the two newspapers by New York's more conservative newspapers coined the stigmatic term, yellow journalism (Whyte, 2008; Yellow journalism, 2013). Dispelling several myths, W. Joseph Campbell explains that yellow journalism "advocated an ethos of activist journalism, yet did so in bursts of unabashed self-adulation" (2001, p. 1). John D. Stevens explains the connection between yellow journalism and local news coverage: "If they titillated, the yellow papers also told New Yorkers what was going on, what forces were shaping their lives. Each issue bulged with news accounts and feature stories which were little parables about life in the big city" (1991, pp. 99-100). Thus, the investigative reporting that blossomed in the 20th century grew out of the independent, locally focused activist reporting that was spurned by traditional journalism in the previous era.

Figure 7.14 The Yellow Kid

Richard F. Outcault's "The Yellow Dugan Kid" (public domain)

As mentioned, American Journalism is considered one of the four pillars of democracy, providing a crucial check on the three branches of government. Often referred to as the Fourth Estate, journalism's watchdog role is as ingrained in American culture as football and the white picket fence. Throughout history, journalists have been celebrated as all-American, hard-working heroes in popular culture. Clark Kent's nerdy spectacles belied his true identity as Superman; the intrepid, perseverant reporter underdog exposes the sins of the powerful antagonist.

During the 20th century, news values of the Fourth Estate were codified, and social movements of the 1960s and 1970s redirected focus to issues of social justice, corporate greed, and political misconduct. The civil rights movement exposed a predominantly white and male news industry to minority communities and injustices that had not been well covered previously, or, perhaps, at all. The women's rights movement brought debates about abortion, birth control, gender equality, and sexuality to the forefront of news coverage.

Thus, by the turn of the 21st century, journalism's watchdog role was firmly established, and technological advancements were seen as new means of both freedom of expression and accountability. Further, the typical lag between regulation and innovation increased as governments tried to navigate the complexity of new technologies and their implications for civil

and political rights.

Using terms and images that attract the attention of the nanosecond society, a new industry has arisen as a 21st-century form of yellow journalism, in two forms. The first is called clickbait. News organizations include clickbait on their websites to generate revenue because they haven't found a viable business model for the digital era. Typically, a section runs alongside the hard news content with a relatively obscure attribution line, as shown in Figure 7.15. Sensational headlines and images leverage trust in the news authority to lure readers to other websites with the hope of generating revenue. Of course, these "infotainment" items find their way to social media platforms along with the hard news stories produced by news organizations. On Twitter, it may be even more difficult to discern clickbait from news, particularly when individuals fail to follow hyperlinks and read the details associated with a tweet. Thus, the Twitter digital news platform is vulnerable to yellow journalism.

As described in Chapter 3, Twitter is an even more streamlined version of the inverted pyramid format. Headlines are limited to 140 characters, and a general assumption made about Twitter information practice is that individuals scan a tweet for its main point, and follow the embedded hyperlink(s) to acquire more in-depth information. This assumption is a dangerous one. Future research will explore the relative frequency of what I call *blind tweet propagation*: instances when a Twitter user takes action (e.g., retweet, reply, quote, like) in response to a tweet without following its hyperlink(s) to assess the related content. Reasons for this information practice may include a desire to seem up to date and well informed in one's network, trust in the producer of the tweet, an intention to review the material in the future, and other motivations that may not be as straightforward. In addition, Twitter bots—algorithms that carry out automated tweet propagation—convey endorsement on behalf of their users sans review, as well.

Figure 7.15 Clickbait
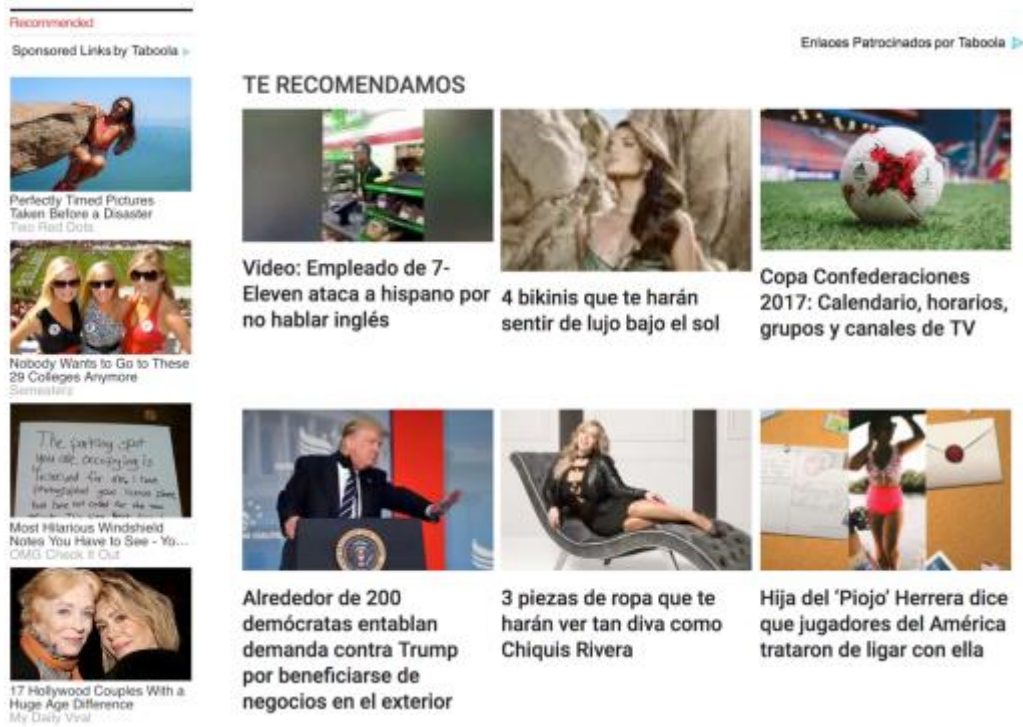
Clickbait is a new form of yellow journalism, in which people get suckered into reading sensational news items with dubious veracity. Source: BBC.com, laopinionla.com.

The second form of modern yellow journalism is harder to spot. In addition to intentionally sensational clickbait, hard news stories may be misidentified or misrepresented by headlines that are created by algorithms relying on the performance data of prior tweets in a network. For example, an algorithm designed to detect the terms that generate high user engagement as measured by retweet and like counts can contribute to the reuse of inflammatory terms in automated headline creation.

The modern-day equivalent of the introduction of photojournalism is, of course, the smartphone. With startling suddenness to a significant portion of the white population, video evidence of police brutality against people of color entered public consciousness—over and over again on social media. Frustratingly reminiscent of the events that fueled the civil rights movement of the 1960s, LA_CIT_P3 is emblematic of a shift in expectations for the representation of truth in journalism. With video and social media platforms, once-marginalized

voices are able to permeate the mainstream news media. In the face of perceived incontrovertible

evidence, systematic racism finally has entered the discourse of the general public—at least those

who are open to such ideas (see Figure 7.16).

Figure 7.16 Public Awareness of Systematic Racism
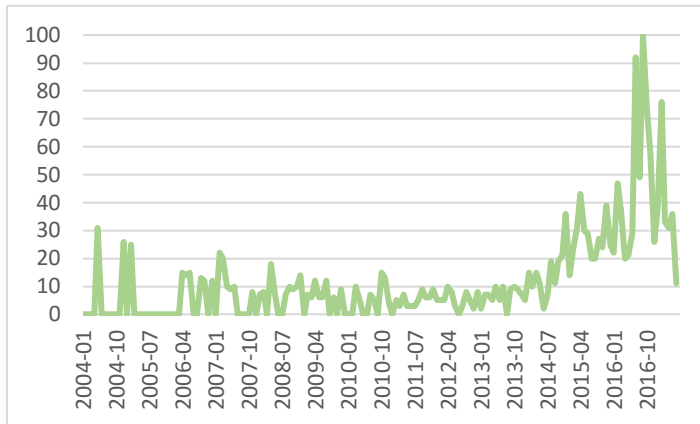
Video accounts of police brutality and racial unrest prompt increased public awareness of systematic racism. Source: Google Search Trends.

The September 20, 2016, shooting of Keith Lamont Scott by police in the parking lot of the Village at College Downs apartment complex in Charlotte touched off two nights of unrest as hundreds of protestors shut down Interstate 85. North Carolina Governor Pat McCrory declared a state

of emergency and instituted a curfew, deploying the National Guard and State Highway Patrol to

reinforce local police. The protests ended with a fatal shooting, multiple injuries to police

officers and citizens, and millions of dollars of damage to businesses in downtown Charlotte. "I

understand concerns and I understand frustration and anger but I will never respect violence,"

McCrory said. "Violence is unacceptable" (Maxwell & Eversley, 2016).

An affluent city of 827,000 people, Charlotte, North Carolina, is the second-largest

financial services center in the United States. Known as the banking capital of the South,

Charlotte is home to the headquarters of several major financial firms, including Bank of

America and Wells Fargo. This rosy description belies a striking income disparity between

Caucasian and African-American households in the greater Charlotte region; while 60% of

Caucasian households earn more than $60,000 per year, 70% of African-American households

earn less than $60,000 per year (Nichol, 2016). Keith Lamont Scott's death triggered riots that

forced the likes of Bank of America and Wells Fargo to remain closed on a business day. Artist

and activist Bree Newsome explains how wealth inequity and biased police treatment served as

an incendiary backdrop for the protests:

> "Like many cities around the nation, in Charlotte we have a real
> issue of wealth inequality. We've had several incidents of police
> brutality…. this was not an isolated incident. This is a tipping
> point, a kind of boiling-over moment, for the city and for the
> nation, in a lot of ways. Folks are not just reacting to what
> happened in Charlotte, but also to what happened in Tulsa and
> what happened in Baton Rouge" (Democracy Now, 2016.)

Police maintain that Scott was armed with a gun and ignored commands to drop

his weapon. Scott's family claims the 43-year-old father of seven held the *Quran* in his hand, not

a gun. Neighbors' eyewitness accounts say Scott was shot by a white police officer, asserting

that police attribute the shooting to African-American Officer Brently Vinson to deflect

allegations of racism. "It's time to change the narrative, because I can tell you from the facts that

the story's a little bit different as to how it's been portrayed so far, especially through social

media," Charlotte-Mecklenberg Police Department (CMPD) Chief Kerr Putney told the media.

U. S. Attorney General Loretta Lynch called for calm, saying recent officer-involved shootings

of African Americans "have once again highlighted—in the most vivid and painful terms—the

real divisions that still persist in this nation between law enforcement and communities of color."

In his report to North Carolina State Bureau of Investigations Director Bob Schurmeier

and CMPD Chief Putney, District Attorney R. Andrew Murray concluded that Officer Vinson's

use of deadly force was lawful. Murray's report contains several references to information

provided to and distributed by the news media via social media and cites evidence from witness

statements, forensic evaluations, medical opinions, and video footage (both mobile phone and

bodycamera) to discredit many of these accounts. In the conclusion of his report, Murray

explains that the findings of his investigation do not diminish concern about the inequalities in

Charlotte:

> "Let me be clear: I have not and will not condone violence or property damage as a means of expression. But the fact that criminal charges are not appropriate under the law in this particular case does not mean we can dismiss the concerns expressed by those who raised their voices to raise the consciousness of this community. I think it is time that all of us recognize that this is Charlotte, and not everyone experiences the same Charlotte" (Murray, 2017).

Conflicting accounts of such incidents, expectations of instantaneity, and the multi-generational effects of systematic racism contribute to growing mis- and distrust of the mainstream news media. As Vincent Warren, executive director of the Center for Constitutional Rights, explains, "after 193 [killings of African Americans by police thus far in 2016], I am quite prepared not to believe the police department narratives about anything that happened, and these investigations and eyewitness reports become much more important" (Democracy Now, 2016).

LA_CIT_P3 is an excellent example of how journalism's algorithmic turn, too, can contribute to long-time news authorities' declining credibility. Consider the headline featured in

the CIT (introduced earlier):

Note: This image is a composite of versions captured by the author and preserved in the Internet Archive to represent the original tweet from @latimes.

Several temporal issues make this a bad headline, in terms of journalism's Fourth Estate responsibilities. Network members noted that prioritizing the negative aspects of Scott's past before the positive ones predisposes the reader to form a negative impression of Scott overall. Moreover, readers criticized any reference to Scott's past whatsoever, since this information was not known to officers at the scene at the time of the shooting.

After 14 hours of negative feedback from the latimes network, the article was tweeted by @latimes again, this time with a less controversial headline:

Two alterations to the CIT are notable: (1) references to Scott's past were removed entirely, and (2) the headline does a better job of representing the event by including the role of police in Scott's death. The headline of the original news article on latimes.com also changed over time. An analysis of the underlying code reveals that the headline of the original article, posted at 5:50pm on September 24, 2016, was updated on September 25, first to change the article's headline, and then to correct a typo. Figure 7.17 presents a side-by-side comparison of the original and updated article headlines. The elapsed time between the first and second versions of the article map closely to the elapsed time between the two versions of the CIT.

Figure 7.17 *Los Angeles Times* Article Headline Comparison

The original The article headline (left) and the edited version (right). There is no notice to readers that the article and headline have been updated. Source: latimes.com.

The objection to temporal references in the headline underscores a conflict between two types of news values. The past/present time orientation conceptualization of absolute good and evil conflicts with the Fourth Estate expectation for balanced reporting and unbiased presentation of information relevant to the readership. By emphasizing Scott's past, readers assert that the news organization is failing to uphold its journalistic standards. Interestingly, several replies to the CIT mention that the *Los Angeles Times* has a history of maligning African-American victims of police brutality (see Figure 7.18 for one example). Like the interjection of historical reference in the *La Opinión* pre-automation network, the *Los Angeles Times* track record in reporting on issues of race is used to establish the news organization's reputation as biased against people of color.

Figure 7.18 Use of Track Record for Past/Present Absolute Judgment

Headline writing is an art. There is a certain hubris in the belief that one can automate headline composition without increasing the risk of reputational damage, as exemplified by the Keith Scott tweet. Though Tronc's algorithm is held under lock and key, one can apply the TAFIP to posit a narrative of the information practice that led to the original tweet from @latimes, which drew so much ire, and the revised tweet, which was posted several hours after the reputational damage was incurred. As described in Chapter 3, Tronc is getting video news from users, who tag articles from their perspectives, often failing to provide well-balanced context for the news item. If the algorithm detects terms that have resulted in high retweet frequencies and uses those terms in a thesaurus for the text and/or metadata associated with the user-generated content, then it is ill-equipped to detect imbalanced reporting and, therefore, allocates greater weight to inflammatory terms and content. Members of the latimes Twitter network also called attention to this risk, as shown in Figure 7.19. This is a failure to anticipate the expectations of the offended readership. And it is extremely hard to program this complex

Figure 7.19 Response to LA_CIT_P3 Criticizes Tronc

Tronc's much publicized automation plans are called to task in response to the Keith Lamont Scott tweet from @latimes.

decision making process. Not only did the *Los Angeles Times* fail to meet the

expectations of the audience by publishing an incendiary and incomplete headline, it also failed

to respond in timely fashion to extremely negative feedback that damaged the news

organization's reputation and contributes to the American public's general distrust and mistrust

in journalistic authority.

Chapter 8: Morality, Identity, and Cultural Time Orientation on Twitter

The Time Analytic Framework for Information Practice (TAFIP) makes it possible to explore how previously unstudied temporal elements of the information context influence information practice [though, as noted, you do not make it very explicit how the framework actually guides the analyses; only a few mentions of only a few stages appear; might be useful to have a table listing the stages down the first left column, and examples of their application across three more columns, one for each news site. This might be a good place, too, to list the major implications from the study associated with each stage]]. This study uses the TAFIP to consider the effects of cultural time orientation on digital news before and after American Journalism's algorithmic turn. The previous three chapters describe cases in which information practice reflects future or past/present time orientation, and investigate the ability of news algorithms to replicate the nuanced influence of cultural time orientation on human judgment in the prioritization of social media posts by comparing the Twitter activity and network structures of the three news organizations over time.

This chapter recaps the aims of the research, describes how temporal values and beliefs manifest in news prioritization, and investigates whether these indicators differ when news prioritization is determined by human or algorithmic judgment. Finally, the chapter concludes with a discussion on the implications of the algorithmic turn for identity, trust, and ethics in communities with different cultural time orientations.

8.1 Cultural Time Orientation in News Prioritization

The first research question asks to what extent human and algorithmic news prioritization reflect the temporal values and beliefs of culturally distinct news organizations. There are two inherent subquestions: 1) How do temporal values and beliefs manifest in news prioritization,

and 2) How do these manifestations differ when the information agent is human versus algorithmic?

The preceding case studies demonstrate that Twitter network members trust news organizations that prioritize information according to their shared values (one of which is time orientation) [I put it this way because a. I doubt that any of the twitter users thought about time orientation, and b. there are of course many other influences too], and avoid sources that fail to do so. Effortful responses to news organizations' tweets bring violated expectations to light, revealing mismatched values and poor prioritization on the part of the news organization's social media manager or algorithm. This instrumental role of prioritization arises from the four premises discussed in Chapter 3:

1. Culture forms the basis of individual preferences
2. Cultural time orientation influences interpretation of meaning and assessment of information value in context
3. Prioritization results from continuous information evaluation and decisions for action, and
4. Consistent prioritization of information establishes expectations for information practice.

Thus, the prioritization of news items serves as a [one of many] proxy for a news organization's values hierarchy, and this study focuses on the Prioritization stage of the Time Analytic Framework for Information Practice (TAFIP).

As discussed in Chapters 5, 6, and 7, temporal values and beliefs manifest in different ways in the Twitter networks of culturally distinct news organizations. For example, the social media manager at *The Korea Times* during the pre-automation period prioritizes celebrity news and cultural events, reflecting the Korean penchant for pop culture and the persistence of traditional cultural observances in the Korean-American community, a future time oriented practice. Most of the activity in the koreatimes pre-automation network originates from other

network members, who (1) mention @koreatimes as a news authority, and (2) use the Twitter platform to discuss in-person celebrity interaction, distribute news alerts, and advocate for causes. As a result, the network exhibits disproportionate in- and out-degree centrality (see Figure 8.1), indicating that the news organization does not prioritize engagement with readers, but uses the Twitter platform to broadcast news alerts and infotainment. In addition, the coverage of events during which community members engage face-to-face with celebrities reflects the high value placed on interpersonal relationships characteristic of future time oriented cultures.

The laopinionla pre-automation network also exhibits disproportionate in/out-degree centrality, suggesting that *La Opinión* did not focus on engagement with network members on the Twitter platform. This conclusion is supported by Rafael Cores's statements that the organization directs its social media efforts to Facebook, rather than Twitter. ImpreMedia's prioritization of Facebook influences the types of news articles included in tweets from @laopinionla, as well, with an emphasis on sports, celebrity events, and community activities.

Figure 8.1 In-Degree/Out-Degree Centrality, Pre- and Post-Automation
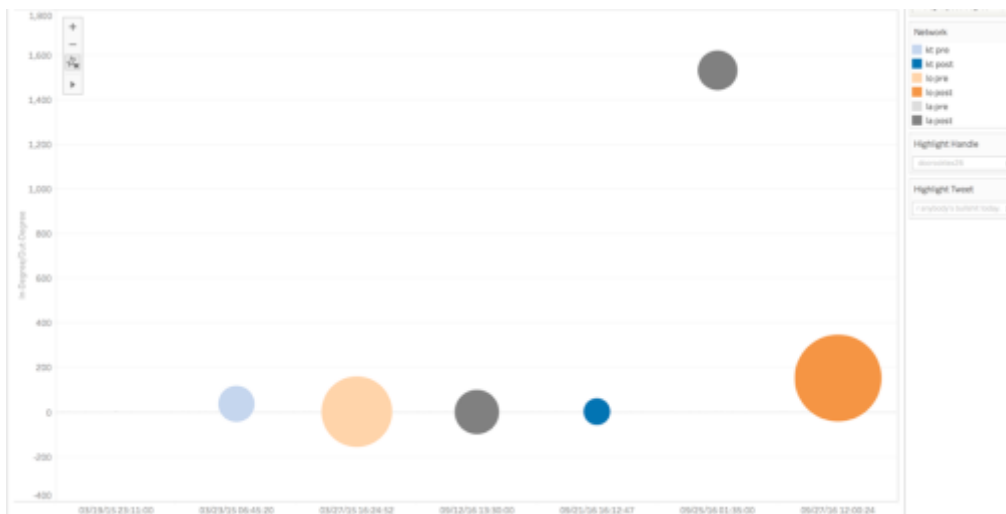
Disproportionate in-/out-degree centrality demonstrates the news organizations' cultural time orientations in the use of the Twitter platform. Created by the author.

A key difference between these two networks in the pre-automation period, aside from scale, is that *La Opinión's* Twitter news readers use the Twitter platform for community engagement. These participants tend to be fervent soccer fans, and consider themselves a part of a community tied to Mexican sports teams. This sense of community belonging is most evident in the *La Opinión* network, and helps to explain the impatience and irritation expressed by @0scar0lvera when he feels slighted by the sports broadcasters who fail to retweet his contributions to community discussions. In this way, cultural identity is tied to the past/present time orientation of the Latino-American community.

The latimes pre-automation network also exhibits a past/present time orientation, as described in Chapter 7. Expectations of instantaneity and an informal, often disparaging, tone among CIT conversation participants are indicators of a short-term focus with respect to interpersonal relationships, which is characteristic of cultures with a past/present time orientation.

Topographically, the three pre-automation networks have a similar structure at different scales. Each resembles a solar system, with a number of satellite clusters orbiting around a central node representing the news organization. However, topologically, the three networks exhibit structures that may be associated with cultural time orientation. As described in Chapter 5, the koreatimes pre-automation persistent tweet creates a ring among @koreatimes and two network members, which originates and ends at the central node. In contrast, the topology of the laopinionla CIT depicts conversation on the fringe of the network in a mesh structure, with the only mention of the central node, @laopinionla, entering the conversation as a temporal aside to establish one participant's judgment of the news organization's track record. Finally, both of the CITs in the latimes network during the pre-automation period are linear paths, reflecting the

instrumentality of each individual contribution to the unidirectional conversations, as well as an information practice arising from the structural and temporal constraints of the Twitter platform.

In the post-automation period, when all three news organizations used algorithms to post news items to Twitter, we see a broadening of topic coverage in the koreatimes and latimes networks, but the laopinionla network coverage shifts from a focus on pop culture and sports to politics (see Table 8.1). The change responds to a community in crisis, as readers seek guidance from *La Opinión* amid a dizzying volume of misrepresentative and fake news about changes in immigration policy that would have dramatic effects on the Latino-American community. The shift reflects the values hierarchy of a past/present time oriented community, prioritizing leisure activities and immediate experience in relatively stable contexts, and seeking guidance and absolute judgment from a community authority in times of crisis. This prioritization exhibits the community focus on immigrants and Latino-Americans, particularly during crisis when the network members seek guidance from an authority with the community's interests at heart. The persistent conversation stems from the central node (@laopinion).

Table 8.1 Topic Coverage before and after Automation

	Pre-Automation (March 22 & 27)	Post-Automation (September 20 & 21)
koreatimes	Event Public Safety Politics	Celebrity Event Politics Sports
laopinionla	Media Sports	Politics
latimes	Media Politics	Celebrity Crime Media Politics Technology
Twitter Los Angeles Region	Celebrity Event Humor Meme Travel LGBTQ Media Sports	Business Celebrity Crime Entertainment Event Film Finance Humor Media Philanthropy Politics Porn Public Safety Sports Technology Travel

News coverage broadens in the koreatimes and latimes networks, but shifts to crisis management in the laopinionla network. Topic classifications for paths that persisted for multiple generations in each network and topic classifications of trending hashtags reported by Twitter during the pre-automation and post-automation time periods. Created by the author; compiled from trend leaderboards, the Internet Archive, and NodeXL Pro.

The second research question asks how the shift from human to algorithmic prioritization of news items for distribution via Twitter affects news organizations' social media activity. There is no network type in the Himelboim typology that represents what news organizations *say* they aim to achieve on social media—namely, high engagement among the organization and its readership. Such interactions would exhibit reciprocity and a relatively balanced in- and out-degree centrality.

Instead, we tend to see one or the other, as represented by the support and broadcast

network types. Further, if organizations aim, in TAFIP terms, to post news that garners the attention of network members to the extent that they perceive the information to be of value, prioritize its redistribution, and are motivated to do so with additional commentary, we would expect to see the central node (e.g., @koreatimes, @laopinionla, @latimes) field and respond to queries. We also would expect news organizations to place less weight on retweet numbers, focusing, instead, on meeting the expectations of the network by engaging with those in-bound tweets that add to the discourse.

The current focus on exposure as measured by impressions and retweets may make it easier to impress investors, but it does little to measure actual engagement. Recall from Chapter 3 that this study is concerned with Twitter actions that require more than two mouse clicks. Focusing on tweet types that entail more than two mouse clicks—replies, quoted statuses, and tweets—provides an indicator of willingness to invest time and attention.

Retweets are a means of conveying agreement, but may also be used to project (or fish for) a desired social status or identity. For example, if a doctoral candidate forgoes engaging in time- and attention-consuming Twitter discourse to focus, instead, on finishing his manuscript, he may be concerned that his diminished engagement will undermine his hard-won status as a subject matter expert. However, the candidate may activate his System 1 decision-making mode to keep up appearances by retweeting the posts of trusted information providers. In this way, System 2 (deliberative, slow thinking) is distinguished from System 1 (heuristic, fast thinking) in the Twitterverse, according to the relative investment of attention and time in the tweet. Thus, retweets and likes may serve a heuristic function for Twitter users, while tweets, replies, and quoting tweets require greater effort—more than two clicks. This distinction ensures a more reliable perception of value and priority during the Evaluation, Prioritization, and Action phases

of the TAFIP.

Given what we know about the virality of memes—that viral memes act like simple contagions, while non-viral memes act like complex contagions—we might look to concentration or centralization for clues as to what makes a tweet ripe for retransmission through several generations. Concentrated communities can "trap" a information item, particularly those that travel through dense networks with few outliers (Weng, 2013). On the other hand, information diffusion beyond the local community is more likely between the nodes of strong dyads (pairs of nodes with high interactivity and follower overlap) when they are composed of an authoritative, broadcast node and a highly active, well-networked, receiver node (Zbeig et al., 2012). This is observed in the complex CIT in the latimes post-automation network, as described in Chapter 7.

Protracted conversation exists on the fringe: these are conversations that—for whatever reason—motivate the investment of time in action to broadcast one's perspective in ways that appeal to identity, morality, belief, and, sometimes, obsession [and narcissism; see the citation provided earlier]. These interactions happen among small sets of people—and, sometimes as the result of months of self-redistribution. These persistent tweets may be characterized as beacons for attention and action. The persistence of the individuals engaging in the conversation is reflected in the tweet's longevity. Thus, an understanding of the types of topics that motivate persistent information practices (like self-propagation and calling for authoritative attention) helps to evaluate how heuristic information practices and/or automation affect the expression of cultural time orientation in social media networks.

While CITs were expected in the large satellite clusters, the results of the network analyses indicate that the most persistent tweets in a network tend to be found in small communities with relatively weak connection to the central cluster—the sun. This finding

implies that the bridges between groups take on even greater significance when following messages influenced by cultural time orientation, because the likelihood of message transfer between distant clusters diminishes over time as new information attracts attention and older conversations are forgotten. Thus, news organizations wishing to trigger viral news distribution should foster the development of strong intergroup dyads, which is accomplished, in part, through reciprocal engagement. In other words, network members in past/present time orientation cultures expect to relate to news authorities as peers. Focusing on heuristic measures makes this task much more difficult.

Despite widespread focus on retweets, likes, impressions, and other measures of exposure to information as key performance indicators (KPIs), findings of the present study suggest new measures [such as?] may provide greater insight into the beliefs and information practices of news organizations and their respective readerships. These findings also may extend to other types of organizations and the people with whom they share information.

The persistent tweets selected as critical incidents in this study concern topics about which individuals tend to adopt fervent positions. The conversation threads that prompt individual action—expression of moral outrage, appeal for change, correction of outlier opinion—tend to have some connection to culture, because they entail deep-seated beliefs. For example, a frequent theme in the koreatimes tweets is "historical recognition." Tweets about this topic reflect a culture espousing information practices shaped by colonial annexation, war, torture, and indignation. Proportionately, tweets about historical recognition are much more common in the koreatimes networks, compared to the laopinionla and latimes networks. This finding merits further examination of how cultural time orientation manifests in the prioritization and distribution of tweets by news organizations for two reasons. First, populations that have

experienced genocide and dehumanizing captivity tend to adopt a future time orientation. For example, the American Jewish population tends to be more future time oriented than the general American population [citation for this?]. Second, these populations tend to be more distrusting of information practices that may be used against them in the future.

Much like the janitors in Chatman's 1991 study on gratification time horizons, people whose belief in the possibility of a better future has been extinguished tend to be past/present oriented. They rue the current state of affairs, yet accept it as "the way things are." In contrast, groups that emerge from oppression and dehumanization often attribute their survival to a belief that better circumstances are possible (e.g., Victor Frankl's explanation that his rebellion against dehumanization in a Nazi concentration camp was his internal mental control and focus on the possibility of survival) and exhibit a fervent commitment to preventing such atrocities in the future. It is my sense that post-genocide populations place high value on education and historical recognition, because these are instrumental in protecting their people and cultural identity from future attack. This future oriented perspective may be noted, for example, in the Jewish Shoah and the Armenian Genocide Memoriam Complex, among other post-genocide cultural initiatives.

8.2 Effects of the Algorithmic Turn on News Prioritization

Automating social media engagement should increase stability of information flow throughout the Twitter networks as a result of fewer unexpected/outlier posts, because the rules dictating the selection and distribution of news are standardized. Such stability, then, may be observed in a graph of the tweet frequencies of all three news organizations over time. However, a comparison of pre- and post-automation tweet frequency shows no significant difference (see Figure 8.2).

Figure 8.2 Tweet Frequency and Trends over Time
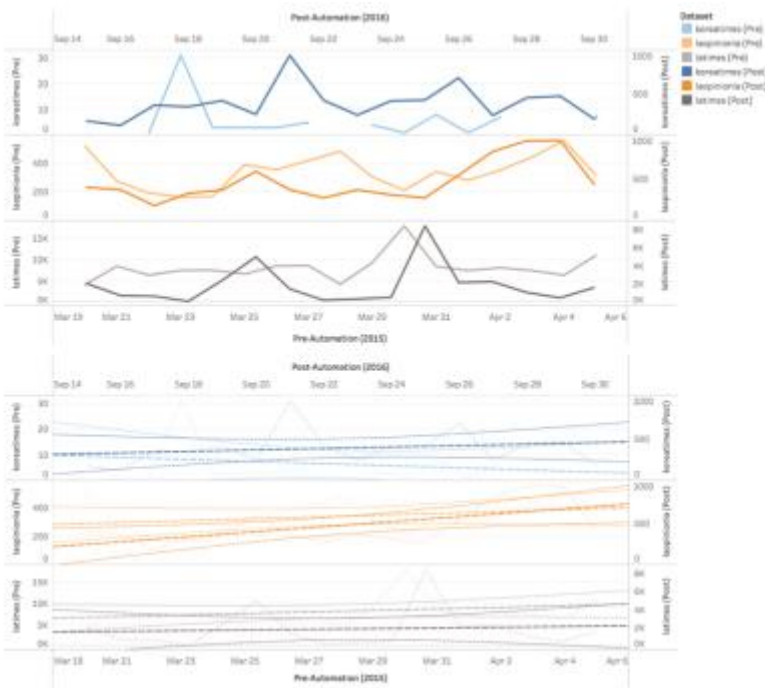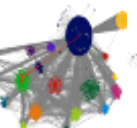
The tweet frequencies of the three networks before and after automation show no significant difference. Created by the author.

While the koreatimes and laopinionla networks increased in tweet frequency after automation, the general ebb and flow of the number of tweets containing koreatimes and laopinionla remained reminiscent of the pre-automation period. The latimes network, however, exhibits greater variability in frequency and fewer tweets in the post-automation period than it did in the pre-automation period. A differ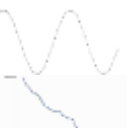ence in data collection procedures for the latimes pre-automation period contributes to this disparity, as described in Chapter 3.

One of the risks of automating news organizations' participation in social media is that certain algorithmic deductions may reinforce undesirable information practices. For example, as demonstrated by the complex CIT in the latimes post-automation period and discussed in Chapter 7, automation may stack the headline deck with inflammatory terms that reflect poorly on the news organization. Recent news about further layoffs of editors at Tronc does not bode well for a more rapid response to negative feedback or editorial oversight of social media posts.

Table 8.2 Types of Critical Incident Tweets, Pre- and Post-Automation

	Korea Times		La Opinión		Los Angeles Times	
Automation Period	Pre	Post	Pre	Post	Pre	Post
Authority	Public Safety w/ Underlying Historical Recognition			Immigration Crisis	New Experts/ Debate	New Experts & Violated Expectations Response (Race Relations)
Fanatic		Celebrity Engagement	Celebrity Validation		Celebrity Stalking	
Advocate		Animal Rights				
Network Structure Topography						
Persistent Topic Topology						

Each news organization's cultural time orientation manifests differently in the types of CITs that are persistent in the network before and after automation. Created by the author.

The CITs in this study engage participants who may be described by three general categories, as shown in Table 8.2. Authorities, Fanatics, and Advocates play different roles in the Twitter networks of groups with different cultural time orientations. In the pre-automation period, present/past time orientation results in persistent tweets that concern celebrities or politicians, and express dissatisfaction with the ways in which those individuals engage with supporters. In the case of *La Opinión,* @0scar0lvera laments the cronyism of the ESPN sports broadcasters, but is reined in by a community member who, in true past/present time orientation fashion, interjects his absolute judgment of one of the broadcasters, based on a solid track record of reporting. *The Los Angeles Times* case, on the other hand, escalates into threats against

celebrities, and prompts the removal of the fan from the Twitter platform. Both cases suggest a mismatch between the fan's expectation of instantaneity, the structural temporality of the Twitter platform, and the social network's culturally informed Twitter etiquette. Information practices that leverage this structural and cultural temporality through mentioning handles and self-propagation are the most persistent tweets in the network. In the laopinionla network, a response from the community tempers @0scar0lvera's angst; in the latimes network, Twitter's monitors intercede.

Celebrity engagement is prevalent in the *The Korea Times* Twitter network in the pre- and post-automation periods, too, but the engagement generally is positive and does not require interjection to maintain peace and stability in the network. Further, in the pre-automation period, fan engagement does not generate persistent tweets, only retweets and mentions. In the post-automation period, the most persistent tweet in the network is related to celebrity engagement, yet upholds expectations for respect in relationships, a hallmark of future time oriented cultures.

Identity and acknowledgement

A common theme across the past/present time oriented news cultures is a desire to be heard and acknowledged as a peer. Both @0scar0lvera and @shurig_ complain that their tweets are ignored, as shown in Figure 8.3.

Figure 8.3 Reactions To Being Ignored on Twitter

Both CITs in the pre-automation period of the *La Opinión* and *Los Angeles Times* networks express dismay about being ignored. Source: Twitter.

The trajectories of these CITs differ, however, because one is addressed directly by

another community member while the other receives no guidance; @0scar0lvera's need to be heard is met, while @shurig_'s is not. Interestingly, the latter engages in specific information practices that perpetuate his tweets, bringing the past into the present. People who participate in these information practices have a deep commitment to the ideas they express; they think of their stance on the issue as part of their respective identities. In other words, persistent conversation topics on Twitter are associated with participant identity. [but can veer off into addiction and narcissism]

For example, @shurig_ identifies himself as Jesus Christ, and responds to the lack of acknowledgement by Britney Spears and other celebrities with hateful threats. His expectations of the celebrity and of the Twitter network have been violated, and his responses suggest he is unable to reconcile this violation with his self-concept—his identity [so one could respond that this is an exceedingly academic and identity-centered analysis, when the more common, and probably more justified one, is that this personally is mentally ill and in a non-mediated environment could do real harm to others]. Self-propagation and mentioning news authorities and celebrities are information practices shaped partly by the constraints of the Twitter platform. Figure 8.4 shows how @shurig_ replies to his own tweets to keep the conversation thread alive in the present.

Figure 8.4 Self-Propagation as Persistent Information Practice

@shurig_ self-propagates his tweets by replying to himself over and over again. Source: Twitter.

Other examples of persistent conversation participants whose identities are tied closely to their stances on moral issues include Giny Woo and the activists using Twitter to advance animal rights in South Korea. The activists contribute to a coordinated, distributed Twitter campaign using some of the same information practices as @shurig_. However, the cultural time orientation inherent in the tweets by activists in the *Korea Times* network is reflected in a different set of expectations. Since the activists have a long-term time horizon for ending the dog meat industry in South Korea, they use the Twitter platform differently. Though these activists want an immediate end to the dog meat trade, they do not expect rapid change. "[E]ventually the dog meat will end in Korea but not quickly enough," Woo explains. "It could take many years but key is to continue and never quit campaigning and keep on trying" (Woo, 2017, p. xx). The high value placed on showing respect for interpersonal relationships inhibits the expression of dismay in the koreatimes network before and after automation. Instead, the slow pace of cultural

change motivates the future time oriented members of the *Korea Times* networks to develop sophisticated information practices that leverage the the structural and temporal attributes of the Twitter platform. As described in Chapter 5, the activists recognize and leverage the shifting values hierarchies in the *Korea Times* network by exerting grassroots pressure through the sister cities channel, appealing to Koreans' desire for interpersonal relationships and saving face as a final step in a long path toward modernization. "Korea is a homogenous society and they don't like to tell others what to do," explains Woo. "People don't feel comfortable about any confrontation" (2017, p. xx).

If persistent tweets reveal insights about participant identity, what is the role of news organizations in these high-engagement discussions? Is social media activity by news organizations limited to a broadcast function, or might rethinking the purpose of platforms like Twitter for news producers be in order? It is clear that the type of persistent engagement that builds strong dyads or communities is not prioritized by news organizations. If successful social media engagement were measured not by exposure and retweets, but, instead, by reciprocal discourse as represented by replies, news organizations would be more likely to produce, prioritize, and distribute viral news items [which may or may not be any better in terms of significant or substance].

8.3 Technology, Journalism, and the Pace of Cultural Change

While it is no surprise that the introduction of new technologies brought changes to the form and format of news reporting over the history of American Journalism, the rate at which we must adapt today is unprecedented. And it may be that some cultures will have an easier time adapting than others due to their different cultural time orientations. Korean-Americans are experiencing cultural change at an extraordinarily rapid pace, due to Korea's post-colonial

modernization efforts. The effects of this change are reflected in the Korean dog meat trade case. *The Korea Times* seems to consider Twitter appropriate for news alerts and infotainment, but not political debate or relationship building. The organization uses the Twitter platform in a manner that is consistent with a future time orientation. Members of the koreatimes network use the platform for advocacy, leveraging traditional future time orientation values to exert socio-cultural pressure.

Volatile immigration policies and a shortened time horizon may prompt surprising decision making in societies that are traditionally future oriented. Such cultures, wherein stability is valued more than exploration and spontaneity, may suffer harms to a greater extent than past/present oriented ones in times of change. *La Opinión* typically uses the Twitter network for coverage and discussion of sports and leisure activities. However, when crisis ensues, the news authority serves as a center for the community, distributing a variety of perspectives on the appropriate response to the immediate uncertainty. In this way, the community shows its past/present time orientation and its close ties to cultural identity.

The Los Angeles Times exhibits its readership's past/present time orientation through expectations of instantaneity, disregard for interpersonal relationships, and the expression of personal opinion without regard for long-term consequences. The news organization uses the Twitter platform to disseminate news articles on a wide variety of topics. However, news consumers' increasing mistrust in American media outlets has made way for new types of news authority. Propane Jane is an example of an alternate emerging news authority. She has amassed a small following; of course, eschewing the popular media in favor of a niche expert has the potential to create the same filter-bubble effects for news consumers that we've seen in social media networks, as a result of the confirmation bias [need citation].

Expectations arising from technological and socioeconomic constraints remain in the digital era, in which the public is exposed to much more information in a variety of digital formats. Information practices have adapted to these formats, as well. For example, Twitter's 140-character headlines, handles (identities), hashtags, and hyperlinks funnel content from a diverse population of news organizations, citizen journalists, news consumers, and advertisers into an inverted pyramid structure, meeting expectations for instantly understandable news that can be scanned, skimmed, gleaned in much the same manner as its print forebears.

This innovation pattern persists. With each technological innovation—including photography, telegraphy, radio, television, and the internet—American Journalism introduced alternate perspectives on which American public opinion would be based, and formalized the adoption of new formats as standards for the evaluation of truth in reporting in a new spatiotemporal context. Information practices at modern-era news organizations retain ties to this pattern through consistent adherence to news values that coalesced during the 1960s and 1970s. The implementation of algorithmic solutions to prioritize and distribute news items via social media presents a significant challenge to such adherence, but this should not be considered [as only?] an unprecedented technological challenge. Rather, this is an unprecedented temporal challenge, which may be exacerbated by cultural time orientation.

Both clickbait and algorithms can create a misprioritization of news items, violating the Fourth Estate expectation of news readers. [That is, can algorithms be programmed to uphold traditional news values [Table 6.1] and foster online communities?] In a democratic society, the role of the Fourth Estate is to alleviate the burden on the American citizen to search for information to aid sound decision making. As described in Chapter 2, this includes upholding news values, as well as providing well-rounded coverage of competing perspectives and potentially disconfirming information. The information practices of blind tweet propagation and

the algorithmic turn further jeopardize news organizations' ability to meet these expectations.

The news organization's decision to shift from human judgment to algorithm reflects, in the present case, extreme past/present time orientation. The news industry has shifted from a traditionally dynastic business model to one in which investment firms buy major news outlets with the aim of scaling operations through machine learning algorithms and artificial intelligence. These firms seek relatively short-term return on their investments (Abernathy, 2017). (see, for example, Rice, R. E. (Ed.). (2008). *Media ownership: Research and regulation*. Cresskill, NJ: Hampton Press.) This short-term outlook, when combined with expectations of instantaneity and reliance on heuristic information practices like retweeting and liking, sacrifices contextualization at a time when news consumers need it most.

8.3.1 Social media and public opinion

As the means by which 62% of the American adults access news (Gottfried & Schearer, 2016), social media networks wield unprecedented power in the shaping of public opinion. "Those who work in the politically relevant sectors of the media system (i.e., reporters, columnists, editors, directors, producers, and publishers) cannot but exert power, because they select and process politically relevant content and thus intervene in both the formation of public opinions and the distribution of influential interests" (Habermas, 2006, p. 419). This power manifests in each of the choices made in the process of posting tweets on behalf of a news organization, including "in the choice of information and format, in the shape and style of programs, and in the effects of its diffusion—in agenda setting, or the priming and framing of issues" (Habermas, 2006, p. 419, citing Callaghan & Schnell, 2005). Even as large information portals like Google and Facebook continue to deny their role as media companies—"News and media are not the primary things people do on Facebook, so I find it odd when people insist we

call ourselves a news or media company in order to acknowledge its importance" (Zuckerberg, 2016)—some 44% of Americans use Facebook as their primary source of news, according to a recent Pew study (2016b).

Unchecked by a legal system that is struggling to regulate social media without infringing on civil rights, and fueled by ideologies that appear to be steeped in racist, sexist, and homophobic hatred, fake news has overrun the public sphere.

The dire financial situation in the media sector, combined with the special role that the media plays in democratic society, has created unprecedented vulnerabilities to misuse and abuse of information. While global media can have democratizing or pluralizing effects, there are a host of negative externalities for national cultures, which may affect politics, economics, and social and everyday life (Kellner, 2004).

Carl Bernstein laments the rise of the American "idiot culture," in which news is "disfigured, unreal, disconnected from the true context of our lives" (Bernstein, 1992, p. 25). He admonishes that "[r]eporting is not stenography" (Bernstein, 2016). Yet the financial environment of media industries rewards instantaneity, not investigation.

As many try to reconcile the events of the past year with the reality that President Trump is packing his cabinets with politicians who are defunding Planned Parenthood, repealing Obamacare, and stoking the flames of hate online by emboldening neo-nazis, racists, sexists, and homophobes, I offer an analysis of four trends evident in the present study that made Trump's presidency possible. First, the measures used to evaluate success on social media run counter to the news values associated with quality investigative journalism. Second, massive consolidation in the media industry has prioritized the bottom line over the public interest in a fashion not dissimilar to the commercial journalism of the late 19th and early 20th century (see Rice, 2006).

Third, social networks' low barriers to entry enabled the rise of citizen journalism, increasing competition and obscuring indicators of quality news online. Fourth, advancements in communication technology have contributed to the expectation of instantaneity among consumers of online news.

This section provides an overview of each of these trends, concluding with an explanation of how the pressures to compete in today's media environment have ushered in the era of the algorithm, and why this is a terrifying development.

8.3.1.1 When what's trending ain't what's important

Part of the problem facing news organizations is that the metrics being used to evaluate the performance of tweets are not good measures of a news organization's success in meeting the traditional objectives of journalism. For example, when success is quantified according to number of "likes," the standard for "good" journalism shifts from presenting relatively unbiased and/or multiple perspectives on current events to redistributing content that is popular among those who have been exposed to it. As we all know, just because something is popular doesn't mean it is valuable or accurate in terms of newsworthiness. The reliance on measures of popularity for news valuation not only affects the news on social media networks, but it also extends to other media channels. Television broadcasters rely on local reporting for their newscasts, and trending topics on Twitter increasingly are supplanting coverage of events arising from news judgment.

"The media is a foodchain, which would fall apart without local newspapers" (Oliver, 2016). The demise of local reporting has serious consequences for democracy, as David Simon, former city desk editor at the *Baltimore Sun*, laments: "the next 10 or 15 years in this country are going to be a Halcyon era for state and local political corruption. It is going to be one of the great times to be a corrupt politician" (Oliver, 2016). These concerns are known to the powers that be

at giant news conglomerates. But when Sam Zell, who owned the Tribune Company as it spiraled into bankruptcy, was asked by a staff member at the *Sentinel* about softening news coverage and whether news organizations have a responsibility to the public, he accused the reporter of "journalistic arrogance" and explained:

> "What I'm interested in is how can we generate additional interest in our product and additional revenues so we can make our product better and better and hopefully we can get to the point where our revenue is so significant that we can do puppies and Iraq. Fuck you" (YouTube, 2008).

Despite the obvious financial difficulties forcing newsrooms to reallocate resources, new entrants in the publishing industry have forced a more concerted attention on the bottom line, at the expense of upholding the press's commitment to act in the public interest, which is inappropriable in a capitalist economy.
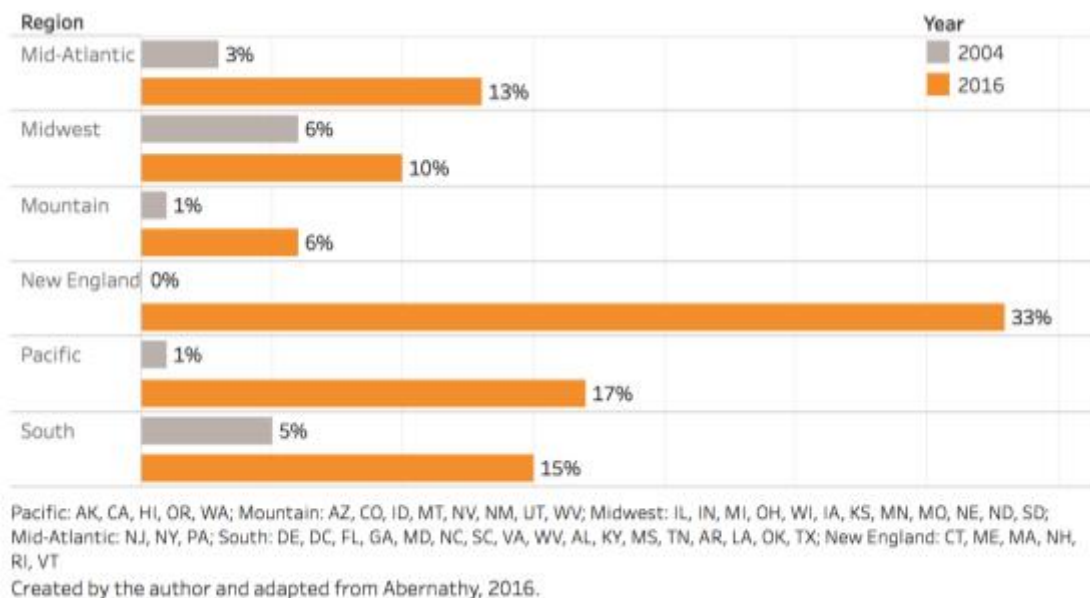
8.3.1.2 Massive industry consolidation

The media industry—like most large business sectors—has seen the ebb and flow of consolidation over the years. Lately, coverage of news company consolidation has focused on the highly publicized, recently collapsed negotiations between Gannett, which has been acquiring a multitude of local news interests, and Tronc, formerly Tribune Corp., which has become the butt of jokes in the media domain for an executive management team devoid of journalism experience and jargon-laden videos describing its plan to pour content into a funnel powered by artificial intelligence (Wemple, 2016). Tronc is the parent company of the *Los Angeles Times*. Gannett made a series of acquisition offers for Tronc; in November 2016, it appeared that the two media powerhouses had come to an agreement at $18.75 per share. However, "[t]he nation's largest newspaper publisher walked away on Nov. 1 when banks balked at financing such a generous price for Tronc" (Cahill, 2016; Marek, 2016).

Oligarchic control of the U. S. news market is concerning, but not a new concern (e.g., Rice, 2006). As venerable journalist Ben Bagdikian noted in 1997 (p. 175), "[n]o national paper or broadcast station can report adequately the issues and candidates in every one of the 65,000 local voting districts. Only locally based journalism can do it, and if it does not, voters become captives of the only alternative information, paid political propaganda, or no information at all." When too few companies control a majority of media companies, the tension between financial and social mandates is more easily skirted, because just a handful of perspectives are compared; inattention to diverse stories is more difficult for the public to notice. This type of control is similar to that of early television news broadcasting, when news consumers had only three channels from which to choose, and all three channels provided very similar content. Thus, oligarchic control of media companies results in homogenized information provision. Even more worrisome is another type of consolidation occurring in the 21st century. Whereas previous mergers and acquisitions in journalism tended to be among industry veterans, today 47% of new owners of news companies have no experience in or ties to journalism. Instead, "a new media baron has emerged—investment entities now own a growing number of newspapers across the country" (Abernathy, 2016, p. 67). (For one of the first analyses of the entry of non-journalism industries into media companies, see Hart & Rice, 1988). This consolidation-as-investment trend includes the major national and regional papers (see Figure 8.5). It also includes local news companies, which are instrumental agenda-setters for communities.

Figure 8.5 Percentage of Newspapers Owned by Investment Entities, 2004-2016

Pacific: AK, CA, HI, OR, WA; Mountain: AZ, CO, ID, MT, NV, NM, UT, WV; Midwest: IL, IN, MI, OH, WI, IA, KS, MN, MO, NE, ND, SD; Mid-Atlantic: NJ, NY, PA; South: DE, DC, FL, GA, MD, NC, SC, VA, WV, AL, KY, MS, TN, AR, LA, OK, TX; New England: CT, ME, MA, NH, RI, VT
Created by the author and adapted from Abernathy, 2016.

This type of consolidation in the news industry is of grave concern, because the short-term nature of these private equity investments disrupts the balance between the tenuous financial-solvency and public-interest mandates of the Fourth Estate. The potential for abuse here cannot be overstated. When a newspaper is accountable to a private equity firm for quarterly earnings, the merits of in-depth investigative reporting and communication of the long-term effects of local decisions on the community stand little chance of being appreciated. What this means, ultimately, is that news organizations must develop new sources of revenue and restructure their business models to compete on digital media platforms. And they must do so in a manner that will underwrite the types of investigative reporting that are necessary for democracy. This will be hardest for the small, local news organizations that need it the most. "The pressure to copy tried-and-true formulas engenders an aversion to creative risk taking and, inevitably, to pat and superficial coverage of news events" (Gardner et al., 2002, pp. 132-133). Thus, heterogeneous news coverage, which is crucial for the well-informed decision making underlying the U. S. election process (and any other decision of import), is threatened not only

by oligarchic media industry control, but also by short-term ownership of news organizations by investment companies (or short-term demands for return on investment).

Such homogeneity further derives from the way that most news organizations attempt to engage with readers online. Since social media is considered the purview of the digital-born generations, a common approach is to ask the millennials on staff to help create an online presence in social media networks. This either results in an initial surge of engagement that peters out over time as interns move on, or the development of some patchwork of off-the-shelf social media software applications used to regurgitate print news stories for the Web, which is what *The Korea Times* has done (Ascher, 2015). In some cases, the news outlets with more resources will assign a team to develop such software in house, which is the approach that Tronc took (YouTube, 2016; Tronc, 2016). Other news companies outsource this development or sign with large news aggregation and distribution companies like Echobox and SproutSocial to create quasi-custom solutions, which was *La Opinión's* approach (Cores, 2016).

8.3.1.3 Citizen journalism and increased competition

In addition to short-term financial decision making, the media landscape is teeming with new entrants. Citizen journalism is the non-professional reporting of news. Sometimes referred to as public, participatory, or social journalism, it occurs when those without professional journalism training make use of technology and global distribution channels to create, augment, or verify news information. "When the people formerly known as the audience employ the press tools they have in their possession to inform one another, that's citizen journalism" (Rosen, 2008, p. 1).

The use of social media to report on political upheaval, natural disasters, and other breaking news events has been heralded widely, particularly in the cases of the revolutions in Egypt, Iran, Tunisia, and the Ukraine. "Activists and politicians in today's Egypt have now fully

embraced the tools of social media not just to support the creation of political capital but also to subvert the competition" (Srinivasan, 2012). Often the term citizen journalist connotes activism in reporting information that empowered traditional media outlets do not broadcast, or divulging corrupt or inappropriate behavior by powerful entities. Citizen journalists earn trust by providing eyewitness accounts unsullied by financial and political pressures. Its tremendous reach and simple interface have made Twitter a primary production and distribution channel for citizen journalists.

Since citizen journalists are not trained professionally to uphold codes of ethics associated with American Journalism (or, for that matter, even in the basic procedures of news writing and source verification), their social media posts run the gamut from completely fabricated baloney to in-depth, substantiated research findings. Social networks have not provided a feasible system for judging the merits of sound reporting. And, there have been numerous cases of inaccurate reporting that led to tweets like the one shown in Figure 8.6.

Figure 8.6 Esteban Santiago Tweet

Esteban Santiago was identified mistakenly on social media as the shooter in the January 6, 2016, attack at the Ft. Lauderdale Airport. Source: Twitter.

8.3.1.4 Expectations of instantaneity, heuristic reliance, and vulnerability to propaganda

Social media networks dramatically decreased the spatiotemporal constraints on information exchange, ushering in an era of news reporting sometimes called the "nanosecond news cycle." Since so many are turning to social media networks as a primary news source, and news organizations have been scrambling to accommodate news consumers on mobile devices, the public has come to expect instantaneous reporting.

When shots are fired at a Florida airport, the Twitterverse learns about it within seconds, as a bystander citizen journalist posts her perspective of the unfolding events. This happens long before a reporter can be dispatched to cover the news, and certainly before any verification or fact checking can occur. Thus, news organizations must decide whether to post unconfirmed news reports as they are available, or to wait for traditional reporting practices to ensure their codes of ethics are being upheld. It is for this reason that local television news stations report on what topics are trending on Twitter—a hedge against missing out on early coverage, but distancing the organization from accountability should the tweets end up being inaccurate.

The difference between the stenography that Bernstein references/critiques and reporting that is in the public interest can be seen in the story behind the film, *Spotlight,* which won Oscars for best picture and best screenwriting in 2016. In 2002, a group of five *Boston Globe* journalists uncovered widespread sexual abuse of children by scores of the district's clergy, and a cover up in which priests accused of misconduct were systematically reassigned to other parishes without accountability. The team's investigative reporting earned a Pulitzer, and the film garnered Oscars for best film and best screenwriting. During his acceptance speech, producer Byle Pagon Faust explained, "We would not be here today without the heroic efforts of our reporters. Not only do they affect global change but they show us the absolute necessity for investigative journalism" (Faust, 2016).

Indeed. Not only did the efforts of investigative reporters contribute to Faust's Oscar, but also instrumental was the news judgment exercised by Marty Baron, who had just moved to the *Boston Globe* from the *Miami Herald* in 2002, when the journalists started investigating allegations of impropriety in the local Catholic archdiocese. Today's media climate, in which measures of news popularity motivate sensationalist headlines and little depth, is not conducive to the kind of news judgment [or of the kinds of personnel resources and temporal horizons] required for groundbreaking news coverage. Instead, news is released in snippets, as quickly as possible, without contextualization.

These developments have undermined the public's trust in journalism, particularly in news distributed through social media networks. "Even when the originator is known without doubt, queries of the veracity and reliability of what is presented run unbroken from the propaganda pamphlets of seventeenth century wars and religious strife to the web-cams of the politicians of the twenty-first century" (Bawden & Robinson, 2009, p. 182).

News consumers depend on heuristic information practices to find the information on which to base their decisions. Amid growing dis/mistrust of the mainstream media in the wake of the 2016 presidential election, these heuristic mechanisms increasingly come in the form of opt-in communications from emerging thought leaders as trusted sources. For example, there has been a resurgence in the popularity of email digests from think tanks (e.g., Stat, Neiman, countless others). In the Twitterverse, this trend manifests in following new influential subject matter experts, such as Propane Jane. Thus, the evolution of news organizations—from traditional legacy businesses with long-term strategic goals to one of many private equity firm investments focused on short-term returns—creates a conflict between the instrumental obligations that made American Journalism the quintessential model of democratic free speech.

It is important to note the tremendous propensity for commercial search engines and social media networks to perpetuate the biased assumptions inherent in the structure of the classification systems underlying their technology. Certain forms of biased information (e.g., hate speech, propagandistic rhetoric, and fake news) are privileged in these algorithms to the exclusion of potentially counter-balancing types. The temporal nature of homogenizing information practices is central to this proliferation. For example, the Tronc "funnel" that detects and redistributes eyewitness video in social media feeds is designed to provide local perspectives on news events in lieu of journalistic coverage. It's a cost-cutting measure that, frankly, reeks of the sort of stenography lamented by Carl Bernstein. Without appropriate contextual framing, simply grabbing local eyewitness accounts of events creates greater risk of bias and misrepresentation. Further, the user-generated content redistributed by the *Los Angeles Times* is prone to homogeneity, because the algorithm selects content that meets certain criteria, to the exclusion of perspectives with the potential to be equally relevant.

As demonstrated by the dog meat trade activists in Chapter 5, technological systems will be leveraged to the advantage of those who are able to identify information practices beyond straightforward search engine optimization, which raise the likelihood of prioritization. Just as those who hold strong opinions on polarizing topics learned to self-propagate to extend the duration of tweet exposure and to mention news authorities to increase the likelihood of engagement on Twitter, network members will learn to game the Tronc funnel. This will result in increased homogeneity in news proliferation and accelerated diffusion of biased and/or false news.

As shown by the *Los Angeles Times's* failure to respond to negative feedback in a timely fashion, reputational damage caused by violated expectations, compounded by delayed

acknowledgement and correction contributes to the mounting dis/mistrust of traditional news organizations (see Figure 8.7).

Figure 8.7 Critics Recognize the Effects of Automation

Tronc's much publicized automation plans are called to task in response to the Keith Lamont Scott tweet from @latimes.

While algorithmic literacy is important for the protection of citizens' civil rights (among other reasons), awareness that automation has supplanted human news judgment and cultural sensibility further undermines public trust. Such automation is highly vulnerable to manipulation by individuals and groups with strong political stances and access to technology, simply because those with fervent beliefs are more willing to invest time and attention in propagating their content. Computational propaganda—"the use of algorithms, automation, and human curation to purposefully distribute misleading information over social media networks"—is among the top 10 threats to society, according to the World Economic Forum (Woolley & Howard, 2016; World Economic Forum, 2014).

President Trump's outright rebuke of news authorities as purveyors of fake news and blocking the Twitter accounts of citizens who criticize him are examples of authoritarian use of social media for political control. Findings of the Computational Propaganda Worldwide Research Project indicate that "[c]omputational propaganda is one of the most powerful new tools against democracy" (Woolley & Howard, 2016). While technology behemoths (e.g., Google, Facebook, Twitter) feebly claim that platforms bear no responsibility for ensuring the veracity and contextualization of news items, news organizations must acknowledge their role in the proliferation of fake news and work to combat it. The past/present time orientation with

which decisions are made to downsize editorial staff and deploy algorithmic social media solutions at *La Opinión* and the *Los Angeles Times* is one trend underlying the rise of fake news on Twitter. *The Korea Times,* in contrast, limits its use of the Twitter platform to relatively non-polarizing topics.

The TAFIP may be deployed to aid in the effort to combat computational propaganda. For example, the framework may help programmers devise hybrid human/machine technological configurations to detect news items that meet the expectations of a news organization's readership in terms of proximity, timeliness, and other values of significance to past/present time oriented populations. The TAFIP also may aid social media platforms in thinking about the ways in which news items could be contextualized using techniques that reflect the cultural time orientation of news organizations and their readerships.

8.4 Conclusion

Drawing from critical theory, cultural studies, journalism, science and technology studies, and several other fields, this study examines the prioritization of news items distributed via the Twitter streams of three culturally distinct news organizations—*The Korea Times,* the *Los Angeles Times,* and *La Opinión.* Network analyses of the tweets of each news outlet in time periods before the implementation of algorithmic social media solutions reveal patterns that may be attributable to cultural time orientation, and which are more difficult to detect in the Twitter activity of these organizations after the transition to automated tweets. Cultural and temporal patterns in the Twitter streams of news organizations may be lost in the transition from human to algorithmic social media content creation and management, as shown in the disastrous headline and delayed reaction to criticism in the latimes post-automation network. The discovery of differences in the structure of these networks before and after the switch to algorithmic news

selection, prioritization, and dissemination may signify that culture is influential in the prioritization of news items shared with each organization's audience and that this influence is not easily replicated in algorithmic solutions. This is particularly true of programmatic solutions designed by third parties who may not share or understand fully the values hierarchy of those who previously were responsible for this essential news function. Further, the implications of these findings are important for news (and other) organizations conducting cost-benefit analyses to guide resource allocation and policy decisions.

By analyzing differences in the news organizations' network structures and identifying the news items—as represented by tweets—that generate different types of social media activity, one may learn more about how members of different cultural groups value information according to the ways in which they conceive of time. The TAFIP makes it possible to conceptualize many more of the moving parts of the news organizations' information practice than existing models, because it accommodates evolving, non-linear information practices, agnostic of the meaning, purpose, or intent of the content.

The research presented in this dissertation rests on an assumption that cultural time orientation might be observed best in tweets that persist over time, because cultural beliefs are difficult to change. Future research may explore other aspects of the Twitterverse, but the present exploration of persistent conversations yields several interesting findings worthy of attention from information scholars.

Examination of persistent conversations using the TAFIP provides a new perspective on the uses and effects of social media. The most telling examples of persistent conversations that reflect cultural attributes like time orientation tend to concern polarizing topics, such as animal rights, immigration, and race relations. In all of these cases, fervent opinion is expressed when a

behavior or practice occurs that offends one's deep-seated moral beliefs. The Twitter platform provides an opportunity for individuals to voice their support or objection to behaviors and practices, meeting a variety of psycho-social needs. This is interesting because most of the focus on KPI measures observed in news organizations tends to relate to financial—rather than psycho-social—goals. Further, when behaviors or practices of news organizations and/or individuals violate readers' expectations, people from different cultural backgrounds use the Twitter platform in different ways, which seem to reflect cultural time orientation. Each news organization, too, reflects its cultural time orientation in its information practice, including how social media platforms are used, what form of automation is implemented, and the prioritization of news items distributed via Twitter.

In summary, this research offers a framework for thinking about differences in values that have significant influence on digital news production and consumption. As researchers, we must adopt a future time orientation to ensure that news values are preserved, especially for populations with a past/present cultural time orientation.

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