



Managing Opacity: Information Visibility and the Paradox of Transparency in the Digital Age

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Organizational transparency is in vogue. When technologies make it possible for information, decision processes, and behaviors to be visible to others, actors and organizations will presumably be forced to behave more responsibly because they can be held accountable for their actions. In this article, we question the theoretical assumption that higher visibility results in more transparency. We distinguish between transparency and visibility and offer a conceptualization of visibility as the combination of three attributes: *availability* of information, *approval* to disseminate information, and *accessibility* of information to third parties. The management of each of these attributes independently or jointly contributes to the relationship between visibility and transparency. Our discussion surfaces a phenomenon we call the “transparency paradox,” in which high levels of visibility decrease transparency and produce opacity. The theorization of this transparency paradox and the mechanisms through which it operates have important implications for theory and practice surrounding the role of technologies in organizational action in the digital age.

Keywords: availability, approval, accessibility, inadvertent opacity, paradox of transparency, secrecy, strategic opacity, visibility management

Introduction

During the last two decades, organizations have adopted an increasing number of information and communication technologies (ICTs) that make information about collective and individual behaviors, expertise, communications, and decisions visible for all to see (Leonardi, 2014; Leonardi & Meyer, 2015;

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Yuan, Rickard, Xia, & Scherer, 2011). The proliferation of ICTs has important implications for task performance, deliberations, and decision making not only within the corporate sector but among all types of organizations and in society at large. For example, nongovernmental organizations tout their increasing ability to monitor global multinational corporate activities through ICTs (Yaziji & Doh, 2009); political activists laud the ability of new digital devices to enable new forms of organizing (Rheingold, 2002), and social justice entrepreneurs use ICTs to create sites for discussion of heretofore undocumented corporate transgressions and, by doing so, help “turn discussion into action” (Loomio, n.d.). New information technologies also facilitate consumers’ abilities to see the production processes involved in the products they buy (Li, 2013) and enable individuals and groups to develop richer political information repertoires (Wolfsfeld, Yarchi, & Samuel-Azran, 2015). E-government initiatives are grounded in the idea that digital technology enables access to government documents heretofore unavailable, enhancing the transmission and accuracy of information and facilitating deliberative and effective civic decision making (Fountain, 2001).

Without a doubt, technology-enabled digital visibility is tied to the zeitgeist of transparency. When technologies make it possible for information about actors’ behaviors, communications, decisions, and opinions to be visible to interested parties, those actors and the organizations in which they work will presumably be forced to behave more responsibly because they can be held accountable for their actions. The antithesis of transparency, opacity, is associated with impenetrability and misdirection. Whereas transparency implies that third parties can clearly follow the chain of activity and decision making that led to a certain outcome, opacity implies that such activity and decision making are hidden from view and cannot be seen or assessed by third parties. Opacity is assumed to stymie knowledge acquisition and undermine rational discourse, whether it is unintentional or strategic.

An assumption undergirding this typical approach is that visibility has a corresponding relationship with transparency such that the more ICTs help to make organizational actions visible, the more organizations will become transparent. In this article, we argue that such an assumption is faulty; *visibility and transparency do not have a direct correspondence*. In fact, we argue that increased information visibility can sometimes dramatically reduce transparency. When we mistakenly assume a relationship between information visibility and transparency, we begin to adopt policies and procedures that require new ICTs to make information visible. But this quest for transparency through the management of visibility can have unintended and paradoxical effects.

We distinguish between transparency and visibility and begin by offering a conceptualization of visibility as the combination of three attributes: *availability* of information, *approval* to disseminate information, and *accessibility* of information to third parties. Although transparency is generally believed to be achieved at high levels of each of these attributes, we demonstrate how highly visible information can actually increase opacity and how each attribute of visibility independently or jointly contributes to the degree to, and manner in which, the relationship between visibility and transparency is managed. Theoretically this move is important because it disentangles transparency and visibility, contests a one-dimensional view of visibility and its management, and challenges the ideological positioning of transparency in the organizational landscape. In practical terms, this article illustrates the tensions and

paradoxes that arise as organizations use ICTs in an attempt to manage visibilities and increase transparency.

The Relationship Between Information Visibility and Transparency

It is not surprising that *visibility* and *transparency* are often conflated in scholarly writing and public discourse (see Flyverbom, 2015). Both nouns connote the ability to see; something is visible if it is capable of being seen, and something is transparent if it can be easily seen through or detected. But visibility is distinct from transparency—first, in the sense that visibility is not a valued term in the same way transparency is, and, second, visibility is an empirical phenomenon. Building on a long line of research that explores the how visibility enables transparency (for a review, see Christensen & Cheney, 2015), we bring together disparate studies to argue that visibility is a construct consisting of three interrelated empirical attributes: (1) the availability of information, (2) approval to share information, and (3) the accessibility of information to third parties. When all three of these attributes are found at high levels (e.g., information is available, someone has approved its dissemination, and it is accessible to third parties), information is *visible* but not necessarily transparent. By contrast, when one or more of these attributes are at a low level (e.g., information is available, someone has approved its dissemination, but it is not accessible to third parties), that information is less visible or *invisible* and, in that case, less transparent. Importantly, organizational actors can manipulate each of these attributes. For example, information can be made more or less available to others, approval to disseminate information can be granted or taken away (or the ability to approve can, itself, be authorized or prohibited), and information can be presented in ways that make it easy or difficult for others to access even if it is technically available. Table 1 provides explanations of each of these attributes and the underlying mechanisms that constitute them. We discuss each of these attributes in detail below.

Availability

A convincing body of research in the social studies of science has found that information and data do not exist “out there” in the world waiting to be found. Instead, the world is made up processes that have to be captured and later presented in ways that turn it into data and information (Taylor & Van Every, 2000). Although people in organizations perform many actions and make decisions, their activities must be transformed into information for them to be available to be made visible. Consequently, the availability of data and information is the first major attribute of visibility. There are at least two processes through which information becomes available: inscription of action into recognizable data forms and the storage of those data.

Table 1. Mechanisms Through Which Visibility Is Produced.

Attributes of Visibility		
Availability	Approval	Accessibility
<i>Inscription:</i> Actions are turned into data when they are recorded in some way.	<i>Legal obligation:</i> Laws and regulations requiring proprietary data to be made public	<i>Directory knowledge:</i> Knowledge about what information and data exist to be had—specifically, knowledge of who has what information and who knows the people who can get the information
<i>Storage:</i> Inscriptions are kept in some format and device through which they can be accessed by others.	<i>Norms:</i> Industry or field-based conventions that compel organizations to disclose certain kinds of information and data	<i>Classification:</i> Schemes through which data and information are cataloged so that others can easily acquire them
	<i>Social consciousness:</i> An organization’s decision to make data available and public because it is the “right thing to do”	<i>Skills:</i> Mechanical skills to acquire data (such as the ability to read or write computer code) and interpretive skills to make sense out of the data
		<i>Effort:</i> The amount of effort required to access data and information; the greater the effort required, the less accessible it is

Inscription. Actions are not data. Actions occur in the practice of everyday life. Talk in a meeting is an action. Decisions to sign a contract with a particular supplier or to bomb a particular country are actions. But unless those actions are somehow recorded or documented, they cannot become data upon which people can later reflect. In their famous study of an endocrinology laboratory, Latour and Woolgar (1986) observed that facts about the world are constructed as scientists turn the activities occurring in the natural world into data that can be presented in papers, discussed, and then debated. They termed this conversion of action into data *inscription*—actions become data or facts only when they are written into existence in some way. As the authors describe:

Inscriptions are regarded as having a direct relationship to the "original sustenance." The final diagram or curve thus provides the focus of discussion about the properties of the substance. The intervening processes are bracketed off in discussions about what the figure means. The process of writing articles about the substance thus takes the end diagram as a starting point. (p. 51)

Inscriptions are thus selective and dependent, in large part, upon the medium through which they are inscribed. For example, an organizational meeting in which a decision is made to discontinue the production of one of the company's oldest product can be converted into data through various kinds of inscriptions. One type of inscription could be the taking of minutes, whereby the actions occurring in the meeting are written down on paper or typed into a word-processing program. But what will the recorder capture? Every word that is uttered, or only a selection? The medium of inscription provides further limitations. Written words cannot capture the speaker's emotion unless special efforts are made. The writer, for example, may add special notation to capture whether someone is happy or upset.

A different inscription device—say, video—offers different capabilities and limitations. Video can capture emotion and may record the whole meeting. But certain actors will be more in focus than others, thus potentially privileging their commentary. In short, data are not self-evident. Organizations create data about their processes through inscription. If something is not inscribed, it, for all intents and purposes, did not happen and data do not exist, and it is not visible. But even if it is inscribed, it will never truly reflect the actual activity that occurred; it becomes only a representation of it. Each of these choices has implications. Noting the date and start and end times of the meeting is quite standard, as is listing those present and absent (although some organizations do so by position or representative of an office rather than name, and some list explanations for absences as well). If a meeting takes place that purposely excludes some "expected" attendees and that is not noted, it will be impossible for others to determine that the exclusion occurred. Excluding the dynamics of discussions, issues raised, data sought, or even the agenda items likewise makes reconstruction of the decision-making process impossible (and this may be intended or unintended—in either case, the type and degree of inscription is a form of managed visibility).

Storage. Once data are inscribed, they will fail to persist if they are not stored. The written minutes from the meeting must be placed in a binder or saved into a database if they are to be saved and eventually shared with others. Storage is essential if data are to be visible to others. But storage does not lead directly to visibility. Data are often stored in private servers that others do not know exist, behind passwords that are private, or in coded languages that others cannot decipher. Data also become invisible or more opaque if they are stored in a way that violates or ignores typical classification systems or if the classification system changes over time, and thus other individuals may not easily find them. This is often the case with historical archived social statistics. Governments change the definitions of categories or alter the components of indices. Unless the user is aware of the changes and the dates when they occurred, the data are obscure and often misleading. Data are more visible if they follow a classification scheme that is conventional to a community (Bowker, 2005). Data, particularly electronic data, also may be stored on outmoded technologies that become inaccessible to most potential users because the users no longer have the data tape readers, floppy disk drives, or cassettes that are needed to access the information stored on

them. In short, storage is a key component of visibility. Data cannot be visible if they are not stored, and even if they are stored, where and how they are stored can affect people's ability to find them (see the section on *Accessibility* below for a discussion of retrieval of stored information).

Approval

As processes that make data and information available, inscription and storage are necessary but insufficient conditions for visibility. Even if data are inscribed and stored in ways that *could* make them visible, unless the owners of those data approve their viewing by outside audiences, the data will remain invisible. Thus, approval is the second key attribute of information and data visibility. Approval can take various forms. We highlight three common modes of approval in organizations: legal obligations, norms, and social consciousness.

Legal obligation. Many types of laws require organizations to share their stored data with outside parties or, at least, to provide those data upon request. Sometimes the data already exist and legal obligations compel organizations to make them public. In other cases, laws spur the inscription and storage of data in the first place. For example, the Patient Protection and Affordable Care Act, commonly known as the Sunshine Act, mandated by the U.S. Centers for Medicare and Medicaid Services (CMS), requires applicable manufacturers of covered drugs, devices, biological products, and medical supplies to annually report to CMS information regarding payments, ownership, investment interests, and other transfers of value to physicians and teaching hospitals. The regulations, which were approved in 2012, require organizations to begin capturing data on financial transactions on August 1, 2013, and to submit their first federal reports by March 31, 2014. The submitted data are then placed on a public website for all citizens to examine. Before the Sunshine Act, many companies that are purveyors of medical supplies and devices did not track data on such payments in systematic ways, let alone publish those data in a manner that the general public could see them. Following this legal obligation, not only were inscription and storage practices changed at many companies, but the data that were produced and stored were now required to be shared outside the organization. Thus, data that were once proprietary (or that did not exist at all as data before) were, through legal obligation, made public.

But it is important to note that the Sunshine Law and other regulatory mechanisms, although making some things more visible, may have the opposite effect than intended. For example, the legal requirement to have all public meetings (of school boards, county commissioners, and zoning boards, for example) held in open sessions is often negated by closed, "unofficial" meetings in which discussions and decisions occur that are then carried out in minimal fashion in the mandated open session. The result may be that participants' votes are recorded, but little else about the deliberative process is actually visible.

Norms. Organizations sometimes approve the dissemination of privately held data because of industry or field norms. Isomorphic pressures within organizational fields often compel organizations to share data that they would otherwise hold privately because other organizations do so. For example, Meek, Roberts, and Gray (1995) examined voluntary annual disclosure practice in major multinational corporations in the United States, Europe, and the United Kingdom. They found that, due to norms in particular industry segments, companies often made data public about strategic, nonstrategic, and

financial information about topics such as market share growth and new products, trend analyses and comparisons with competitors, sales forecast breakdowns and plans for expansion as well as product descriptions and long-term objectives. Although the public disclosure of these data was not mandated by any legal authority, it was normative in these organizations for managers to approve the dissemination of them to the general public, thus making it possible for outsiders to access them. Organizations also may use these voluntary public disclosures to foster a greater sense of disclosure and information than is actually occurring. In April 2014, Citizens for Responsibility and Ethics in Washington (2014) reported that corporations' "voluntary" public disclosures detailing their political contributions differed significantly from the required 527 filings they submitted to the Securities and Exchange Commission, and thus the official disclosures were effectively obscured by the voluntary public reports.

Social consciousness. Legal and normative standards are not the only reasons that organizations approve the dissemination of internal data. Sometimes organizations go against tradition in their industry and disclose important information because they believe it is the right thing to do. Griffin and Sun (2013) find that corporate commitment to addressing climate change led such corporations to not only voluntarily disclose greenhouse emissions but prosper as a result as publics more highly valued their brand. The threats of whistleblowers also may facilitate organizational disclosures and the willingness to approve that information be made available. Edward Snowden's release of formerly classified information led, for example, to the U.S. government releasing additional information (even as much remained unreleased) to attempt (unsuccessfully) to preempt additional worries about what else might have been collected and hidden from public view.

Accessibility

Even if data are available and they are approved for dissemination by the organization, there is no guarantee that they will be accessible to those who wish to see them. Accessibility can take various forms. Data and information are accessible if people have some directory of understanding about what data exist to be seen, how those data are classified so they can find them, if they have the skill to procure and make sense of the data, and if the effort required to obtain the data is not too burdensome. If they are not accessible by people who wish to see them, data and information will not be visible. Hence, accessibility—the level of difficulty associated with retrieving and interpreting the information—is the third major attribute of visibility.

Directory knowledge. What information exists to be known? Without an accurate directory—cognitive or written—people often do not know what they do not know and, thus, cannot access important information. In the psychological and cognitive sciences, researchers often refer to knowledge about what information, data, or knowledge exists as *metaknowledge*. Metaknowledge is comprised of at least two types of cognitive structures. The first structure is commonly referred to as a cognitive knowledge structure (Contractor & Monge, 2002). A cognitive knowledge structure represents one's knowledge about who knows what in the organization. To access the instrumental information, data, or knowledge one needs, a person must first learn where it is. Studies of transactive memory systems in organizations, for example, have demonstrated that work teams whose members have accurate perceptions of who among their coworkers has what instrumental knowledge outperform teams whose members are not able to

accurately identify where such knowledge is located (Ren, Carley, & Argote, 2006). But sometimes, despite a person's best efforts, she or he cannot locate the person who has the needed data or knowledge. In such a situation, a second type of cognitive structure is useful: a cognitive social structure (Krackhardt, 1987). A cognitive social structure represents one's knowledge about the location of information, who knows the resource, person, or people who have the instrumental knowledge. This knowledge of who knows whom and what includes what information is necessary to ensure the successful transfer of instrumental knowledge. Studies of helping behaviors demonstrate that when people cannot accurately identify where required instrumental knowledge is located, they turn to others who they think will know the person who has it and ask to be pointed in the right direction (Perlow, 1997). Having an accurate cognitive map of the informal social structure of an organization may help a person get access to instrumental knowledge when he or she does not personally know the target. The development of a cognitive or written directory of who knows what and who knows whom in addition to an understanding of what information is available is essential.

Classification. Libraries are filled with books containing data and information. But without a classification scheme that helps people to find what they are looking for, they may not even know that a book exists, and if it does, where to find it. For this reason, classification systems such as the Dewey Decimal Classification system were integral in the broad and rapid proliferation of libraries (Wiegand, 1998). Even information that is obtained through electronic search relies on the use of keywords that signal to the search engine's browser that a particular document is relevant for the searcher. Bowker and Star's (1999) work on the history of classification provides many examples of how classification provides access to or stymies people's access to information. If individuals do not know or understand how data are coded, sorted, or classified, they often cannot find the relevant information even if their directory tells them that it is there.

Consequently, certain classification schemes (or the lack of a consistent or rational sorting system) can render data inaccessible to would-be users. For example, in the early 1970s, the library at the London School of Economics had three distinct, nonoverlapping catalogs and shelves that corresponded to them where users could hope to find books. The first two were standard but different systems that included title, author, and subject among the classifications. The third catalog simply listed the books in the order in which they had arrived at the library. Would-be readers had to invest the time to read the titles of books on the shelves or the card catalog in the order in which they arrived to determine whether a needed book had been put in circulation, making the volumes inaccessible to all but those with much leisure time or desperation!

Skill. To access data and information requires at least two skills on the part of the seeker. The first kind of skill is *mechanical*. Data are always stored in some format or location. The conventions of that format must be understood for the data to be accessed, and sometimes the data have to be removed from the location to be processed. For example, accessing data stored in the form of words in books requires the development of the skill of reading. To understand data stored in the form of equations requires skill at computation. These represent very basic skills necessary for the acquisition of data and information. More advanced mechanical skills are sometimes required. For example, terabytes of data about a particular marketing campaign in a large company are stored on a server. But to be useful, those data

have to be extracted from the server and turned into variables. Writing the script that extracts the data requires computer programming skills, and turning the data into variables requires a certain set of mathematical skills to translate those data into metrics. In addition to these mechanical skills, individuals need the right *interpretive* skills to make sense of the data. These interpretive skills are often rooted in culture and experience, such that, for example, jargon is only accessible to a particular professional or cultural group, or abbreviated language codes employed (e.g., LOL, WTF) are standard and meaningful only within particular closed conversational contexts. Both mechanical and interpretive skills are essential for accessing data and information, but such skills require practice to develop (and then only if such expertise is publicly attainable).

Effort. The amount of effort (both physical and cognitive) that it takes an individual to acquire data and information is a defining feature of the data's accessibility. When the procurement of data and information come to require fewer expenditures of effort, they become more accessible. Take, for example, data on faculty salaries at public universities. Those data have long been inscribed in salary tables, indexed by faculty names, and stored in catalog. For many years those catalogs were physical binders. Approval to make those data public was granted by state laws that require state agencies to disclose to the public the salaries they pay their employees. The catalogs containing the salary tables were, historically, held in the statehouse. If someone wished to access them, he or she had to first know that the data existed at the statehouse; she or he then had to travel to the statehouse, find the correct department that held the volume, check the volume out for viewing, and read through it to find the salary numbers needed. All these steps required enormous effort on the part of the person interested in faculty salary data. Thus, although the data were available and approval was granted for people to see them, they were often inaccessible to the general public because they required too much effort to acquire. As those volumes moved online, the effort required to access them diminished dramatically. Instead of driving to the statehouse and checking out a binder, an individual interested in learning faculty salaries could simply point her Web browser at the state's website or the website for the state capital's local newspaper and search for salaries via an online database from the comfort of her chair. As the effort necessitated to acquire this information decreases, it becomes more accessible.

We have explored three interrelated empirical attributes of the visibility construct: (1) the availability of information, (2) approval to share information, and (3) the accessibility of information to third parties. We next explore how these attributes may create visibility but not necessarily transparency.

The Transparency Paradox

To argue, theoretically, that information visibility is tantamount to transparency, as many observers do, is to hold, empirically, that information is available, is approved for dissemination, and is easily accessible to third parties. On its face, such an argument makes good sense. If just one of those attributes of visibility is missing, or exists at low levels, third parties cannot see information, and, consequently, they will be unable to reconstruct the decision path that an organization followed or the outcomes of past decisions. In short, there will be no transparency. This traditionally proposed relationship between visibility and transparency is illustrated in Figure 1, in which varying levels of visibility are placed on the x axis and varying degrees of transparency are placed on the y axis. As the figure illustrates, the

traditional view of the relationship between visibility and transparency is linear: More visibility results in greater transparency.

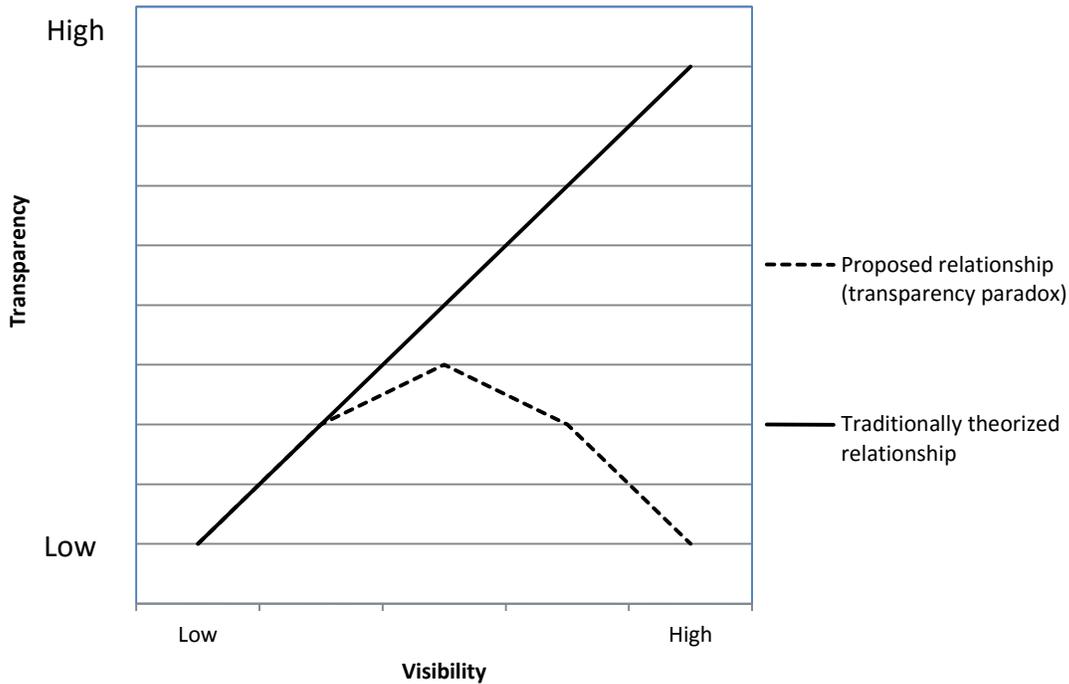


Figure 1. Theorizing the relationship between visibility and transparency.

It is also possible, however, that the relationship between visibility and transparency can be curvilinear, such that the more visibility you have, the less transparency—more opacity—is achieved. This effect is illustrated in Figure 1 by the “proposed relationship” line. In other words, what we propose is a transparency paradox. Increasing the availability, approval, and accessibility of information, which makes it more visible, can have the paradoxical effect of making decision-making paths in organizations more opaque rather than more transparent.

In his 1934 play, *The Rock*, T. S. Eliot presciently asked, “Where is the knowledge we have lost in information?” Whether we use the predigital lens of Eliot or the high-definition lenses of today, his question raises the specter of the transparency paradox. Visibility may produce a flood of information, drowning us in a sea of unstructured and boundless data that overwhelms our cognitive and interpretive capabilities, and hence renders information meaningless or confusing and opaque. Considering the practical as well as theoretical implications of decoupling visibility from transparency, we suggest two possible paths by which greater levels of availability, approval, and accessibility of information may lead to less rather than more transparency: inadvertent and strategic opacity.

Inadvertent Opacity: Information Hides in Plain Sight

The first path by which high levels of visibility and transparency become decoupled is when increasing the attributes of visibility produces such great quantities of information that important pieces of information become inadvertently hidden in the detritus of information made visible—that is, the *information hides in plain sight*. This unintended or inadvertent opacity results from the lack of informational, temporal, or structural boundaries that typically have been in place to manage the flow of information. In these cases, the necessary information is available, approved, and accessible, but it is rendered meaningless because of recipients' cognitive limitations—or what has traditionally been labeled information overload (Toffler, 1970) or interpretive blinders (see Bazerman & Chugh, 2006 for a discussion of why people may not see what is put before them). Of course, it may not only be the limited capacities of receivers that render information opaque. Opacity may result from the interpretative propensities of message receivers who may reshape and adapt information in ways quite distinct from the intended meaning. Moreover, organizations certainly cannot control what a message means for recipients (Christensen & Cornelissen, 2011).

The porous boundaries and affordances of digital media have widely expanded the possibilities for making huge amounts of information available, approved, and accessible for mass audiences and inadvertently hidden or opaque. The abilities afforded by the digital environment to access, process, and transmit information to mass audiences with little extra effort (or cost) through e-mail blasts, repetitive retweets, or other types of social media distribution—what we label *macrotargeting*—also means that many messages that would have been withheld, targeted to a select group of recipients, or sent only once because of the cost of production and transmission are now digitally disseminated to very large numbers of people and often repeated in multiple waves of messages. Whether the information indexes intentions, actions, and/or decisions, recipients may or may not be interested in this information, they may be unfamiliar with the source of the message or focused on other things, and/or they may represent an irrelevant or inappropriate audience for the information. Thus, the message is ignored. Furthermore, individuals who do not perceive the source or the message(s) to be relevant or interesting enough to access initially or open and process the information once may very well treat the unexpected information as junk mail or spam and immediately delete or ignore it. Furthermore, recipients of the messages may experience information fatigue, so that they ignore almost all messages regardless of their relevance or importance. As several scholars have noted, when exposure to too much information and technologies begins to predominate the communication landscape, individuals tend to shut down and cease processing both relevant and irrelevant, high-priority as well as low-priority messages (see Edmunds & Morris, 2000).

Strategic Opacity: Hiding Information in Plain Sight

Strategic opacity is at the core of the second path of decoupling visibility and transparency. Actors who wish to keep certain information hidden from view but who are bound by transparency regulations or norms can produce opacity by strategically increasing the availability, approval, and accessibility of information. In these cases, so much information is visible that unimportant pieces of information will take so much time and effort to sift through that receivers will be distracted from the

central information the actor wishes to conceal. By strategically producing opacity, an actor can hide information in plain sight such that they are still appearing to comply with expectations for transparency. And this is not necessarily problematic. As Eisenberg notes in his seminal work on strategic ambiguity (1984), conforming to transparency expectations also may alienate constituencies and prevent meaningful dialogue. Opacity, vagueness, and even misdirection can foster cohesion and identity among organizational stakeholders.

Strategic opacity through the manipulation of the attributes of visibility is not dependent upon digital technologies, although their development has certainly enhanced possibilities. In digital terms, strategic opacity is steganography cover writing, or what the IT community calls stego—the art of hiding information inside of information so that the recipient does not detect the presence of other messages present (Porter, 2013).

As discussed earlier, the affordances of digital media enable organizations to send a very large set of messages to mass audiences cheaply and quickly (macrotargeting). These same capabilities also enable easy and cheap audience segmentation and provide the opportunity for what we label *micro-targeting*—strategic and sequential data presentation that makes information available, approved for access, and accessible while enabling greater opacity in the guise of visibility. For example, digital media provides the opportunity to craft special briefings of information and strategically chosen frames prior to collective macro-announcements in ways that were not possible before. Similar to the temporal effect found in information cascades (Chierichetti, Kleinberg, & Panconesim, 2014), these messages help shape how future information will be encoded, stored, retrieved, and acted upon, and they provide opportunities to increase the opacity of seemingly transparent messages. When the macro-announcement with its much fuller information set and more neutral framing arrives, the previously targeted audiences are less likely to fully investigate/interrogate the material, because they already “know” what is being presented. Thus, organizations have the capacity to not only tailor messages in a strategic way (message processes) but introduce the information in various strategically chosen frames that help shape how future information will be encoded, stored, retrieved, and processed, providing the opportunity to increase the opacity of seemingly transparent messages.

Conclusion

Digital transformations have made possible rapidly expanding sources and dissemination of information and ever greater capabilities for storage, retrieval, and processing of that information. We have argued that it is the combination of the *availability* of information, the *approval* to disseminate, and the *accessibility* of the information in the context of organizational settings and purpose that illustrates the complex relationship between visibility and transparency and their effects on understanding and utilizing the information. We have explored the individual and interactive importance of each of these three attributes and how understanding these mechanisms enables disentangling visibility from transparency. Finally, we have uncovered the transparency paradox, explaining how opacity can result even when all three attributes of visibility operate at high levels. The transparency paradox goes beyond the idea that when there is an abundance of information available, it is often difficult to obtain useful, relevant information. The transparency paradox indicates that availability, accessibility, and approval of

information need to be managed to produce not only visibility but effective use of that information. The transparency paradox raises important questions for scholars and practitioners interested in open decision making and deliberative democracy. There are many other mechanisms and dynamics of inadvertent and strategic opacity beyond macro- and microtargeting that need to be explored. Understanding these mechanisms will increase our ability to unpack the relationship between and management of visibility and transparency. For example, what are the information minimums and maximums for (a) effective decision making, (b) effective monitoring of organizational conduct, or even (c) being well informed about the issues and choices? What are the unintended consequences of greater availability, approval, and accessibility? Further investigation of the trade-offs among the three attributes of visibility is required both to produce more effective and visible organizational processes and decisions and to understand how organizations may manipulate their presentation of information in the information age as regulations, norms, and capacities continue to change.

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