

# Exploring a Sustainable and Public Information Ecology

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## ABSTRACT

This article explores the design and execution of an intentionally public information ecology by focusing on three of the primary communication activities (blogging, videos, and microblogging) taking place immediately before, during, and after a small international conference of digital media professionals. Drawing on an activity theory framework for analyzing data collected via an exploratory version of contextual inquiry, the author describes two interrelated categories of stabilizing moves for fomenting a public information ecology: those driven by the organization to maintain and publicize a coherent organizational identity narrative, and those driven by conference participants that sometimes diverge from that organizational narrative. Analyzing these two broad categories of stabilizing moves yields insights into how online writing practices may help foster effective and sustainable information ecologies.

## Categories and Subject Descriptors

H.5.3 [Information Interfaces and Presentation]: Group and Organizational Interfaces — computer-supported cooperative work, web-based interaction, theory and models. K.4.0 [Computers and Society]: General.

## General Terms

Documentation, Design, Theory.

## Keywords

tummeling, phatic, Twitter, blogging, microblogging, information ecologies, knowledge work, writing.

## 1. REVISITING INFORMATION ECOLOGIES

Nardi and O'Day define an information ecology as "a system of people, practices, values, and technologies in a particular local environment. In information ecologies, the spotlight is not on technology, but on human activities that are served by technology" [1, p. 49]. Perhaps more importantly, they argue that information ecologies are "*designed*," and that it is the "responsibility and privilege of people in the local information

ecology to shape new technologies and practices" [1, p. 182]. This article explores the intentional design of communication activities in a particular information ecology—one that gathers people, technologies, and practices together in explicitly public ways that form "*durable arrangements*" [2, p. 21], with the specific goal of fomenting diverse and sustainable professional relationships.

The author details research conducted before, during, and after a small international conference (less than 125 attendees) of digital media professionals in both industry and academe. Participants in this information ecology—many of whom did not know one another prior to the conference—created organization-sponsored public blog posts, individual public blog posts, promotional materials, a public website, photographs, and videos; a subset of participants also produced over 500 public updates via the microblogging service Twitter during the conference. These communication activities—encouraged and promoted by leaders within the organization—were designed specifically to establish and then extend a public information ecology among local participants and broader publics.

While Nardi and O'Day were exploring information ecologies before the proliferation of social networking applications and widespread blogging practices, their work was nonetheless prescient for considering how web-based interactions might "serve as connective tissue between and within local information ecologies" [1, p. 185]. "There is no single Internet information ecology," they argue, suggesting instead that "information ecologies are local habitations with recognizable participants and practices" [1, p. 185]. And yet the enabling technologies of social networks and low barrier digital publishing potentially afford broader social interaction, such that the notion of *local* can be realized in terms that allow individuals to come together around *ideas* and *activities* that may "span traditional geographic or social boundaries" [1, p. 185].

Nardi and O'Day were particularly encouraged by the promise of such enabling technologies for connecting people in meaningful social arrangements, often through activities that, when viewed from outside a given information ecology, might seem mundane or even trivial. They argue that "people communicating their own thoughts to other people [online] is heartening," and that "not every human interaction has to meet a high intellectual standard" [1, p. 194]. In fact, findings from this study indicate that mundane and seemingly ephemeral online communication practices may actually strengthen connections within an information ecology while simultaneously evoking interest and interaction from individuals outside of that information ecology.

Shirky suggests that "making something public [. . .] has historically been difficult, complex, and expensive. And now it is none of those things" [3, p. 46]. Enabling technologies such as

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social microblogging, video production and dissemination via mobile phones, and robust blogging platforms allow individuals within a given information ecology to create public content around shared values or organizational goals. Through these sharing activities a particular information ecology may strengthen professional relationships among members and even attract and incorporate new and diverse relationships.

Shirky notes that such activities are not new or the direct result of such enabling technologies, but that these new platforms allow greater opportunities for making connections: "our new communications networks encourage membership and sharing, both of which are good in and of themselves," particularly within a thriving information ecology [3, p. 78-79]. Social networking applications and blogging platforms have made such activities "both expressible and visible" [3, p. 88], surfacing the kinds of human interaction—often mundane and everyday—that were previously ephemeral, interactions "where critical and often invisible things happen" [1, p. 66]. Of particular importance for this study is the fact that these kinds of interactions are increasingly actualized as digital (often backchannel) writing work [4, 5, 6, 7, 8, 9]. As such, the persistence and durability of social ties are fortuitous outcomes of many contemporary public writing practices within a given information ecology [4].

In the remainder of this article, the author describes the research site and organization and their attempts to intentionally design a public and sustainable information ecology. The author then turns to a discussion of the methods of data collection and analysis, drawing upon activity theory as both a framework for operationalizing those methods and for understanding the activities prevalent within the context of this particular information ecology. Deriving emergent codes from the data collected, the author details four codes of particular relevance comprising two broad and interrelated categories of stabilizing moves that publicly establish and maintain—and sometimes repurpose—the values within the information ecology. Building from these findings, the author argues for networked writing practices that can help establish more effective and sustainable information ecologies for similar professional groups.

## **2. THE PROFESSIONAL CONFERENCE AS INFORMATION ECOLOGY**

In 2009, the author had an opportunity to be involved as a participant researcher with the local site coordination team of a small, international conference of digital media professionals from both industry and academe. While the organization has been in existence for less than ten years, membership is active, diverse, and participatory. The organization serves members working in areas such as mobile and ubiquitous computing, augmented reality, interaction design, graphic design, informatics, digital art, interactive television, and distributed collaboration. The organization is particularly concerned with curricular issues related to the interdisciplinary nature of these areas, and it is especially active in bringing together academics and industry professionals to discuss the future teaching and training of scholars and practitioners in digital media. The organization publishes a peer-reviewed journal and sponsors distinguished fellows in digital media research, most of whom are academics.

The organization's annual conference is especially important, since it allows members to realize interactions that are primarily digital throughout the year. The organization also sees the conference as an opportunity to showcase the important work being completed in the various fields that coalesce under the term "digital media." The author was able to observe two separate pre-conference planning meetings at the 2009 conference site, noting that the conference is an important event for both the organization at large and the local site, where several members and officers reside. As is the case with many such professional and academic conferences, the local site coordinators devoted resources and expertise to publicizing and organizing the event; they were responsible for local logistics, the printing and distribution of programs and promotional material, facilities and amenities, and the creation and maintenance of the conference website.

During pre-conference planning meetings, local site coordinators, members of the advisory board, and elected officers discussed ways that the organization might strategically use digital (especially social) media to more effectively foster interaction among participants at the conference. They also saw digital (social) media platforms as providing an opportunity to more effectively engage individuals not currently involved with the organization. To that end, the local site coordinators made several intentional moves designed to increase the visibility and public relevance of the organization. At the second pre-conference planning meeting, for example, local experts in social media were invited to share ideas about how to strategically leverage blogging, video, and microblogging platforms in conjunction with the conference. The local team decided to incorporate an official blog at the conference website, and invited five individuals—three of whom were local—to share their conference experiences and insights as a way to establish and disseminate what Faber calls an organizational identity narrative [10] (while also displaying facility in the kinds of digital media activities congruent with the professional interests of the broader membership).

The social microblogging service Twitter was likewise championed as another form of engagement. Several attendees of the planning meeting expressed a lack of familiarity with the service and its affordances, while one of the invited social media experts suggested that the aggregator service FriendFeed was perhaps a better fit. Ultimately, local site leadership asked those most familiar with microblogging to formulate and execute a strategy for fostering interaction about and during the conference on Twitter. Interestingly, there was no discussion of a conference hashtag—an identifier used to aggregate updates posted from a particular event like a professional conference. This would lead to some confusion among conference participants, a scenario discussed below in section 4.1.

Finally, the author attended an informal meeting the day before the conference, where four of the five individuals invited as contributors to the conference blog considered their posting strategy. It was at this meeting that video production was most explicitly discussed. One of the members created a YouTube channel during the meeting, and members discussed what kind of content they would film and how they would upload and distribute that content. Throughout the planning process, the author repeatedly observed similar kinds of meaningful interaction (both digitally and face-to-face) between the advisory board, elected officers, local site coordinators, and conference participants—a testament to the coordinative work of many concerned individuals within the information ecology.

Nardi and O'Day stress the intentional design of information ecologies [1], and the kinds of activities described herein suggest that the professional conference can act as a venue for the establishment of very public information ecologies. It should be noted, however, that the digital activities discussed in pre-conference planning meetings—a conference blog, strategic organizational use of Twitter, and the creation of an organizational YouTube channel—were all "top-down" impositions of the broader organizational discourse [10]. This is a natural component of an information ecology, but a thriving information ecology also requires "bottom up" interactions from members at large. Both activities can act as interrelated stabilizing moves in the public understanding of the organization.

Additionally, the incorporation of social media, while intentional and significant, was not pervasive. For example, while Twitter use was encouraged by both the conference website and in printed materials given to attendees (see section 4.1 below), messages were not publicly displayed at the venue during conference presentations (for example, on screens adjacent to presenters). Similarly, while Twitter messages often attempted to drive traffic to the conference blog and website, the blog itself—and more importantly, the live-blogging activity accompanying certain sessions—was not heavily promoted in the conference's print materials, possibly because organizers were uncertain as to the effectiveness of these efforts beforehand. The support of more traditional documentation, an investigation largely beyond the scope of this article, might have had a significant impact on the adoption and use of social media at the conference, and the eventual reach of organizational values beyond the local venue.

### 3. THEORY AND METHODS

This section offers both a theoretical perspective and framework for exploring the information ecology detailed above, as well as a description of the author's research design and data collection methods. Additionally, the concept of knowledge work is foregrounded within the context of activity theory, as knowledge work is often actualized in and through writing practices that can be traced and analyzed as evidence of activity.

#### 3.1 Activity Theory and Participant Practices

Kaptelinin and Nardi contend that "*Acting with technology* is a phrase to position our relationship to technology as one in which people act intentionally in specific ways with technology—ways that we can study and for which we can produce effective designs" [11, p. 3]. Many of the participants in the information ecology described above can be seen as explicitly acting with technology. Yet the technology, as Nardi and O'Day [1] and Shirky [3] would suggest, is not necessarily the focal point, but a system of devices and networks that affords meaningful and often already extant human interaction. Activity theory, especially as it is articulated by Spinuzzi [12, 13] and Kaptelinin and Nardi [11], provides a robust theoretical framework for empirically exploring "specific uses of specific technologies" [1, p. 202].

As Kaptelinin and Nardi argue, for activity theory "the *doing* of the activity in a rich social matrix of *people and artifacts*" is what grounds analysis [11, p. 9]. Where Nardi and O'Day's attention to information ecologies asks researchers to consider how different mediums carry different "shaping affordances" [1, p. 198], activity theory provides a mechanism for researchers in the design of

communication to consider human activity as actualized *mediation* between people and (technological) objects, where people use "technology in the context of their own local values" [1, p. 199]. Kaptelinin and Nardi suggest that "*people act with technology*," and that "activity theory casts the relationship between people and tools as one of *mediation*" [11, p. 10].

Among the tenets of activity theory relevant to the present study are notions of human intentionality and the sociocultural shaping of human activity, both of which occur via interactions with technologies in the professional conference information ecology [11]. Activity theory requires meaningful observation, then, of human activity; intentionality and sociocultural influences cannot be gleaned by simply analyzing the artifacts of interaction. Activity theory as articulated by Kaptelinin and Nardi for human computer interaction requires the researcher's attendance to "the primacy of activity over the subject and the object" [11, p. 31]—that is, attention to activities, interactions, and social practices over and above the human subject herself, or the artifacts with which she interacts. In this way, "analysis of activities opens up the possibility to properly understand both subjects and objects" [11, p. 31].

One significant way that activities within an information ecology can be traced is through organizational writing work, especially writing that doesn't result in what might normally be seen as documentation—writing as manifest in microblogging updates, for example. By considering such writing work, activity theory may be productively articulated with knowledge work, where interactions are at once reflective of practices embedded within a "rich social matrix" [11, p. 9]. Spinuzzi defines knowledge work as "work in which the primary product is knowledge, information that is continually interpreted and circulated across organizational boundaries" [14, p. 1]. A key component of knowledge work is its distributed quality, and Spinuzzi argues that "distributed work is the coordinative work that enables sociotechnical networks to hold together and form dense interconnections among and across work activities" [15, p. 268]. Grabill and Hart-Davidson suggest that they are

interested in understanding the activity of knowledge work and in rendering that activity visible to those who are engaged in that activity because we suspect that knowledge work looks like writing (indeed, often is writing) or is substantively supported by writing. Writing is how knowledge work carries value in organizations. [16, p. 1]

Most importantly, Grabill and Hart-Davidson argue that they are interested in "what writing *does*, not in what it means" [16, p. 1]. In other words, surfacing and tracing the literate activity of knowledge work can help us determine writing's formidable role in enabling "sociotechnical networks to hold together" [15, p. 268]. Such writing practices reveal intentional activities that are "epistemologically productive" [16, p. 1], foregrounding writing activity as actionable and explicitly social in the organizational and networked ecologies of knowledge work.

#### 3.2 Methods

Following Spinuzzi [17], the author employed an exploratory version of contextual inquiry [18] as a participant researcher immediately before, during, and after the conference described above, with subsequent analysis of the data via emergent coding practices. Data collection consisted of observations before, during,

and after the conference, interviews with selected participants after the conference, and special attention to collecting publicly available digital artifacts produced in concert with the organization's social media strategy. In light of the activity theory approach described above, analysis will focus on *in situ* observations of participant intentionality during planning meetings and the conference itself, and the primary writing work carried out through conference-sponsored blog posts, videos, and the microblogging activity of a subset of conference participants. Public blog posts were obtained from the conference blog, while public videos were collected from the aforementioned conference YouTube channel. Twitter updates were collected by establishing custom RSS feeds for the two primary conference hashtags in the aggregator service FriendFeed.

Coding began without a starter list, so codes that eventually emerged were inductively derived from the data. In terms of the digital artifacts collected, the author coded 29 conference blog posts from five different contributors, 23 short videos from four different contributors, and 565 Twitter updates from thirty-four unique users. Four codes of particular relevance that emerged across the data are discussed in detail. Some artifacts (particularly Twitter updates) were ascribed multiple codes.

### 3.2.1 Informing

The most prevalent emergent code describes blog posts, videos, and microblogging updates that are predominantly *informative*. For example, 14 of the 29 conference-sponsored blog posts can be termed "live-blogging," where the member creating the post offers virtually no editorial commentary and simply describes, as best as possible, the content delivered by a particular speaker in a particular session. A preponderance of the Twitter updates (48%) were also coded as *informing*, since they effectively do the work of live-blogging in a more granular form. Other blog posts, such as those welcoming conference participants or listing Twitter users active at the conference were likewise coded as *informing*.

### 3.2.2 Informing/Selling

A code particularly prevalent in conference-sponsored blog posts and videos was termed *informing/selling*. In these instances, the content could be seen as primarily informative, but the information provided seemed to be deployed in a way that "sold" the dominant organizational identity narrative. In other words, where the live-blogging posts contained virtually no editorializing, the *informing/selling* posts deployed organizational information within a frame that advertised or reinforced the merits of the information ecology. These posts and videos were explicitly designed to appeal to broader publics in ways that drew upon the strengths of the organization. Of the 23 short videos, 18 were coded *informing/selling*, perhaps revealing a function of the medium and delivery.

### 3.2.3 Tummeling

In direct contrast to the *informing/selling* blog posts and videos, 29% of conference Twitter updates were coded *tummeling* (whereas only 2 blog posts and no videos were coded in this way). Marks notes that the Yiddish word "tummler" is used to describe someone who is particularly adept at facilitating conversation and engagement within online communities—someone who often curates ideas and content while connecting previously unaffiliated individuals from overlapping networks [19]. *Tummeling*, therefore, denotes activities sparked by a "conversational catalyst

within a group, [someone] to welcome newcomers, rein in old hands and set the tone of the conversation" within a given online community [19, p. 1].

Most *tummeling* activities, therefore, do not feel like overt persuasion for members in an information ecology. In fact, Twitter facilitates *tummeling* by virtue of its user conventions, where the strategic "retweeting" (that is, re-posting) of another user's update can bridge structural holes in a given network [20], bringing people together around shared interests or ideas. Twitter's built-in addressivity (the hailing of another user enabled by the "@" sign) also facilitates *tummeling* moves [6].

### 3.2.4 Phatic

Digital *phatic* gestures were exclusive to microblogging updates (27% of all updates), and are closely correlated with *tummeling* activities. *Phatic* gestures in online communities such as Twitter are designed not to be informative, but to express social connections and understanding—even feelings of solidarity or connectedness. For example, the last conference Twitter update collected for this project is explicitly *phatic*, lamenting the return to normalcy and everyday academic life that must occur after the euphoria of engaging with colleagues and friends at the conference.

Such updates are not particularly informative—at least not in any way similar to *informing* posts and videos—and they often express emotion and feelings of dis/connectedness to or from fellow conference attendees. And while *phatic* gestures do not demand a response, interactions around *phatic* posts are fairly common since they may inspire similar reactions from others in the information ecology. *Phatic* gestures, in fact, were often correlated with *tummeling* activities, since *tummeling* involves the kinds of direct user-to-user connections also prevalent in *phatic* interaction.

## 4. FINDINGS

The four most prevalent codes to emerge from the public data collected in exploration of this information ecology comprise two interrelated categories of stabilizing moves: those driven by the organization to maintain and publicize a coherent organizational identity narrative, and those driven by conference participants that sometimes diverge from that organizational narrative. Analyzing these two broad categories of stabilizing moves yields insights into how online (and explicitly public) writing practices may help foster effective and sustainable information ecologies. The four codes described above, therefore, offer insights into these broad stabilizing moves.

### 4.1 Stabilizing Moves of Organizational Identity

The intentionality of communication practices designed to foment a public and sustainable information ecology can be seen most readily in the pre-conference planning of the organization. The explicit attempt to deploy social media in ways that would foster greater public interaction with the organization indicates a strategy for publicizing and celebrating the work of the organization's members. Among the prevalent codes discussed above, the first two—*informing* and *informing/selling*—were predominantly the result of top-down activities, moves to stabilize and manage a coherent organizational identity narrative. Such moves are crucial to establishing and extending a strong

information ecology, since the artifacts from this category (conference-sponsored blog posts and videos) are explicitly linked to the organization's primary website, and are indexed by major search engines and on YouTube.

At the same time, the organization had to manage an issue of failed intentionality. During one of the pre-conference planning meetings (described in section 2), local site coordinators passed the strategic use of Twitter on to a few (perhaps three) members who had some familiarity with the service. One of the items discussed—and then tabled—was the creation of a unified conference hashtag to be used by all willing Twitter participants.

Having a single conference hashtag helps establish organizational identity and makes aggregating, sharing, and finding messages much easier. But the organization didn't just fail to intentionally designate and publicize a conference hashtag; when the conference program was printed, some of the local site coordinators decided to create different hashtags *for each conference session*, a move not without precedent, but one that was met with confusion, laughter, and even derision from some of the conference participants (hashtags work best when they are uniform and easy to remember). Not surprisingly, conference Twitter users soundly rejected the hashtags suggested by the organization, and two primary hashtags emerged from participant writing activities (one was by far the minority, and was eventually discontinued during the conference).

## 4.2 Participant Activities within the Information Ecology

The intentionality of the conference participants may be reflected most readily by the writing activities of the 34 individuals producing Twitter updates (only 3 of whom were also involved in producing content for the first category above); these were participants acting with technology in a "rich social matrix of *people and artifacts*" [11, p. 9]. The third and fourth codes described above—*tummeling* and *phatic* gestures—are nearly exclusive to this category of stabilizing moves driven from the bottom up. Only two blog posts were coded *tummeling*, and no blog posts or videos were coded *phatic*. Much of this disparity can be attributed to the different affordances of the platforms used; clearly, social networks such as Twitter encourage phatic communication in ways that would be difficult to accomplish in a broadcast medium such as a YouTube channel.

But more importantly, *phatic* gestures and *tummeling* represent the kinds of activities that can actually drive the sustainability of a public information ecology, since the writing work involved in these activities may serve to establish and strengthen ties among members. At least four of the conference participants observed in this study may be seen as *tumblers*—active individuals who curate and share interesting ideas, who interact phatically and frequently with other members of the information ecology, and most importantly, whose influence brings outside participants into conversation with current members of the information ecology. These latter activities are documented in the collected Twitter data in the form of "retweets" and extra-conference addressivity (that is, updates coming *into* the conference from interested or curious participants clearly *outside* of the local information ecology).

These individuals connect people inside the social network (Twitter) that is situated within and that extends beyond the comparatively smaller network of individuals comprising the

conference information ecology. *Tumblers*, by virtue of their ability to connect others, provide a kind of stabilizing move for the information ecology that is very different from the organizational moves initiated from above. In this way, social network *tumblers* are analogous to Nardi and O'Day's "keystone species," individuals who "literally sculpt the environment" of an information ecology by introducing and sustaining a diversity of participants and ideas [1, p. 80]. A healthy information ecology, however, requires both kinds of stabilizing moves—top down and bottom up—in a healthy balance.

## 4.3 Sustainable Public Information Ecologies

One of the most interesting insights of the present study is the inversion of expectations about the persistence and durability of online writing artifacts. The organization-sponsored blog posts and videos are still indexed by search engines and can be easily retrieved, while a search for the conference hashtag on Twitter provides no results (though Google still indexes some of the conference Twitter updates). Yet the argument can be made that the seemingly durable artifacts are in fact temporally ephemeral, while the seemingly ephemeral artifacts are what foster the long-term sustainability of the public information ecology. *Tummeling* and *phatic* gestures generated by engaged and passionate members of the information ecology are infectious, and these activities do more for the sustainability of the ecology than the more obvious stabilizing moves reinforcing the organizational discourse.

While in-depth, quantitative social network analysis is beyond the scope of the present study, verification of ongoing interactions between participants who first began interacting at the conference is easily documented. For example, the author selected two Twitter users who were not following any of the other 32 users before the conference; these users are now following 4 and 9 respectively. In turn, these users are followed by 7 and 9 users, respectively, individuals with whom they became acquainted through the conference information ecology. Most importantly, these users are *still interacting with one another* on Twitter, sustaining professional relationships that continue to foster interaction around the core information ecology. In this way, the perceived ephemeral communication activities actually foster continuing social interactions, while the stable, organization-sponsored posts and videos recede from view as static remnants of a past event.

But again, this is not to say that the healthy information ecology can simply forgo top down stabilizing moves of organizational identity narratives in favor of social networks alone. Instead, the healthy information ecology appears best served by a robust mixture of both, for it must be noted that several of the Twitter updates coded *tummeling* involved reference to *informing* and *informing/selling* blog posts and videos. The interplay of these very different kinds of public artifacts and stabilizing moves are what enable "*durable arrangements*" [2, p. 21]. Drawing on Engestrom, Star argues that "technology occurs when joint activity between two actors is articulated [. . .] as the tool occurs, it comes to form a part of the subsequent material conditions mediating further action" [2, p. 21]. The articulation of human subjects, technological objects and artifacts, and the activity mediating action—in this case, in and through a combination of

organizational and organic writing work—is what can sustain the successful public information ecology.

## 5. CONCLUSION

This article revisits the notion of information ecologies by exploring the attempt to create an explicitly public and sustainable organization that leverages a combination of stabilizing moves generated from top down and bottom up communication practices. By observing participant activities and collecting and analyzing the writing work most reflective of those activities, the author argues that *tummling* practices and *phatic* gestures within social networks—moves that have often been seen as ephemeral or lacking in intellectual depth—can actually foster the sustainability of public information ecologies. This study sees social network *tumblers* as a kind of contemporary keystone species, updating Nardi and O'Day's figuration of individuals that help shape and diversify information ecologies [1]. In this way, seemingly ephemeral instantiations of writing activity actually help foster the durable arrangements of this public and sustainable information ecology.

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