# Enacting Media Use in Organizations

***Alf Steinar Sætre***
***Norwegian University of Science and Technology, Trondheim, Norway***

alf.steinar@iot.ntnu.no

***Jan-Oddvar Sørnes***
***Bodø University College, Bodø, Norway***

jan.oddvar.soernes@ansatt.hibo.no

***Larry D. Browning and Keri K. Stephens***
***The University of Texas at Austin, Austin, TX, USA***

lbrowning@mail.utexas.edu; keristephens@mail.utexas.edu

## Abstract

Using ICTs effectively is a major consideration for managers. This paper, which draws on 67 in-depth interviews with advanced ICT users, looks at that empirical data through two lenses: Weick's notion of enactment and Langer's theory of mindfulness. We find that ICT use is more realistically explained by employing the concepts of enactment, scripts, and mindfulness/mindlessness in concert. Mindfulness is required for media richness theory to be predictive, and organizational members construct the richness of one medium through the use of other media.

**Keywords**: Enactment, Information and Communication Technologies, Scripts, Mindfulness/Mindlessness, Communication Media Richness.

## Introduction

Information and communication technologies (ICTs) have long interested both organizational researchers and practitioners. Researchers have developed various theoretical perspectives on technology and organizing, ranging from contingency theory (Burns & Stalker, 1961; Woodward, 1965) to the more recent structurational models (Barley, 1986; DeSanctis & Poole, 1994) and practice-lens approaches (Orlikowski, 2000). Studying ICTs in organizations is particularly timely today because "both technologies and organizations are undergoing dramatic changes in form and function" (Orlikowski, 2000, p. 404). All these changes afford us opportunities to study the process of enactment, since organizations and organizational members must try to make sense of their rapidly changing environments.

This paper aims to better explain, through the analysis of thick qualitative data, how ICT practices are enacted in an organizational context. The goal is to understand media use in organizations; the theories employed are a means to



**Accepting Associate Editor: Raafat Saade**

this end. Enactment is a dynamic, even at times chaotic, process. To create order around enactment research, "organizational researchers will have to generate a rich set of theoretical interpretations, from a diverse repertoire of enactments (actions, influences, statements and events) on the chaotic frontiers of management studies" (Orton, 2000, p. 232). We have rich qualitative data stemming from 67 in-depth interviews to help us do this.

Enactment has now been studied in myriad contexts: strategic management (Mir & Watson, 2000), organizational downsizing (McKinley, Zhao, & Rust, 2000), wage-setting in the construction industry (Kreiner, 1989), organizational learning (Oswick, Anthony, Keenoy, Mangham, & Grant, 2000), sensemaking (Weick, 1988; Weick, Sutcliffe, & Obstfeld, 2005), organizational redesign (Orton, 2000), organizational environments (Manning, 1982), entrepreneurial environments and entrepreneurship (A. R. Anderson, 2000), structural forms (E. Clark & Soulsby, 1999), corporate identity (Marziliano, 1998), organizing (Weick et al., 2005), the construction of self in cyberspace (Waskul & Douglass, 1997), the generative capability of firms (Prencipe, 2001), work and home environments (S. C. Clark, 2002), personal identities (Beyer & Hannah, 2002), cultures of entrapment (Weick & Sutcliffe, 2003), and client-centered conversations in psychotherapy (Wickman & Campbell, 2003), to name just some.

Despite all this research on enactment, few studies have tackled the important technology issues present in organizations today. This paper fills that gap by using Weick's (1979) framework of enactment to study ICT practices. People enact ICT usage via social action. That is, the way people interact with each other and with the technology itself is influenced by social processes — norms, culture, and expectations. Previous research has linked enactment with schema and cause maps. As social action unfolds, schema emerge (McKinley et al., 2000), and since every organizational member experiences social interactions in slightly different ways, individuals enact unique cause maps (Orton, 2000).

We believe that scripts prove more appropriate than cause maps when talking about practices such as ICT usage, since scripts *guide* behaviors, whereas both schema and cause maps only chart how elements are causally related. Scripts therefore go one step further than cause maps; not only do they map how elements are causally related but they also provide "recipes" (scripts) for behaviors, thus focusing our attention on the self in relation to action and outcomes. Therefore, we, like other scholars before (e.g., Ashforth & Fried, 1988; Barley, 1986; Gioia, 1986; Gioia & Poole, 1984), use scripts as a guiding concept rather than maps or schema.

Using scripts instead of causal maps also lets us link enactment to Langer's (1978, 1989) theory of mindfulness/mindlessness. We focus our attention on the enactment of communication processes instead of on organizing and sense-making processes. Thus, integrating enactment, scripts, and mindfulness/mindlessness yields an integrated analytical framework that deepens our understanding of ICT-based communicative behaviors in organizations.

The empirical data come from 67 in-depth interviews that we conducted with advanced ICT users in both the United States and Norway about their everyday work life. Our findings show that the portion of relevant variables that social actors pay attention to determines the degree of mindfulness; also the extent to which social actors pay attention to new variables in familiar situations (instead of the same variables every time) determines mindfulness.

Our analysis shows that by coupling mindfulness to Media Choice Theories (MCTs), we can increase the predictive power of these theories. Furthermore, we show that media richness in itself can be enacted. That is, through frequent interactions and rich media, leaner media can become, if not rich, then at least richer.

In the conceptual framework section below, we explain the concepts of enactment, scripts, and mindfulness/mindlessness. Then we detail our methodology. Following that, we bring our narra-

tive data to life by providing concrete examples that establish the relationship between data and theory. In this section we use data to link enactment, media choice theories, and mindfulness/mindlessness. This coupling is valuable in itself since it sharpens media choice theory and broadens our understanding of both enactment and mindfulness/mindlessness. We end with a closing discussion and conclusion.

# *Conceptual Framework*

## The role of enactment in organizing

In his book *The Social Psychology of Organizing*, Karl Weick (1969, 1979) compares organizing to Darwinian natural selection and presents a model of organizing that consists of four elements: *ecological change, enactment, selection, and retention*. Enactment, according to Weick, focuses on the role of action in organizing and sense-making. Enactment centers our attention away from the passive and receiving and on to the active part of being organizational members. Because all social actors are involved in it, enactment is a crucial process for individuals and organizations alike. Weick (2001, p. 187) contends that "enactment drives everything else in an organization. *How enactment is done is what an organization will know."* Or, as Smircich and Stubbart (1985, p. 724) put it, "A pattern of enactment establishes the foundation of organizational reality, and in turn has effects in shaping future enactments." The first two elements of Weick's theory provide some insight into this perspective.

*Ecological change* indicates an alteration in the flow of experience of social actors. As cognition research shows, these alterations are what individuals tend to monitor when registering change (Einhorn & Hogarth, 1986). "Ecological changes provide the *enactable environment*, the raw materials for sense-making" (Weick, 1979, p. 130). Sense-making is the process through which organizational members understand and cope with a changing and enactable environment. Given today's rapid introduction of new information and communication technologies, with all their implications for organizing, our environments are increasingly enactable.

*Enactment* means that people receive input as a result of their own actions. When people act, "these actions become the raw materials from which a sense of the situation is *eventually* built" (Weick, 2001, p. 183). Enactment implies that social actors interacting with the environment, rather than being passive receivers of it, and reacting to responses to our own actions is part of this enactment cycle. The enactment process or cycle is how organizational members make sense of their environments. Ecological changes, such as the invention of new ICTs, people's actions, and their adoption of new ICTs in the workplace, are important parts of the raw materials for enactment. Almost 80 years ago, Mary Parker Follett pointed to the challenges associated with drawing distinctions between environments (stimulus) and actors (response):

> What physiology and psychology now teach us is that part of the *nature* of response is the change it makes in the activity which caused so-to-speak the response, that is, we shall never catch the stimulus stimulating or the response responding. (Follett, 1924, p. 60)

The point that Follett (1924) and later Weick (1969, 1979, 1995, 2001) make is that it is complicated, at best, to distinguish between actors and their environments. Weick further contends that "enactment is to organizing as variation is to natural selection" (1979, p. 130). Natural selection is at the core of Darwin's (1872) notion of "survival of the fittest." According to Darwin, nature tries out variations of species. The ones best suited to (enact) their particular environments prevail. Enactment is defined as the constitution of the environment by social actors (Weick, 1969). In our study this selection is not of species but of behaviors. That is, over time, certain activities seem to prevail at the expense of other activities, even across contexts. This is selection and re-

tention. For example, if you now find yourself spending two hours a day communicating via email and you were doing none of this 15 years ago, a form of trial and error — natural selection and retention — has taken place in your work habits.

Weick's notion of enactment — at least when applied to ICTs — is very much in line with what Orlikowski (2007) calls "sociomateriality." She states that "materiality is integral to organizing," positing that the social and the material are *constitutively entangeled* in everyday life. Her assertion fits well with those of Follett (1924) and Weick (1969, 1979, 1995, 2001). The basic premise behind the term sociomateriality is that technologies (the material) are enacted. It is this entanglement of the social and the material that is in focus when we look at how ICT use is enacted.

In this study, different ICTs serve as the raw materials for sense-making. It's important to note, however, that ecological change and alterations — or enactable environments — often arise because of some action by the social actor. The actor's capacity to both *create* the environment through action as well as *respond* to it is vital to our understanding of how individuals enact their work environment through the use of ICTs.

Research on enactment has spanned a great many issues where the social actors' behavior and responses are central to the enacted environment. Kreps and Bosworth (1993), for instance, studied the unique dimensions of role enactment — status-role nexus, role links, and role performance — in communities immediately after natural disasters like hurricanes and earthquakes. Kreiner (1989), meanwhile, studied the enactment of wage systems on construction sites and found that the enacted wage system allowed for some "cooking of the books" (p. 71). Choo (2001) studied a program in the World Health Organization (WHO) and found that sense-making and enactment are integral parts of an organization's knowledge-generating system and, thus, organizational learning. Czarniawska-Joerges and Wolff (1991) argue that managers, leaders, and entrepreneurs are enacted archetypes of leadership roles in organizations.

The central premise of Abolafia and Kilduff (1988) is that market participants create, or at least co-create, the environment that then impinges on their activities. Showing that enactment is not automatically directed toward progress and positive results, Edwards, McKinley, and Moon (2002) argue that organizational decline can be enacted by both internal managers of an organization and its external constituents through self-fulfilling prophesies. Smircich and Stubbart (1985) discuss *Strategic management in an enacted world,* and argue that the "environment of which strategists make sense has been put there by strategists' patterns of action — not by a process of perceiving the environment, but by a process of making the environment" (p. 727). These studies show that enactment is contextual, that it is not necessarily democratic, and that enactment opportunities do not necessarily need to be equally distributed.

While researchers have thus far scanted the enactment of ICTs, there are two exceptions that are important to consider. Gallant and her colleagues (2003) aim to integrate sense-making and enactment with informatics by creating what they call a communicative organizational informatics (COI) framework, which they then employ to study wireless use of PDAs (personal digital assistants). They contend that users enact structural properties on PDAs that they've learned from their previous use of other ICTs. Orlikowski (2000), meanwhile, persuasively argues that it is through human action and interaction that organizational structures are enacted. Her study focuses on people's use of Lotus Notes as a collaborative tool in different settings. That study shows how people themselves enact structures simply by their technology usage. Common to both of these studies is their focus on a single ICT. Our study, in contrast, aims to be more comprehensive. It includes all ICTs commonly available to organizational members. Our aim is to show how organizational members participate in the enactment not

only of their environments but also of their media usage and indeed the very richness of the media they employ.

In the following paragraphs we will elaborate on Weick's (1969, 1979) model of the enactment process, and then relate it to a subset of causal maps, namely scripts, which we then use to link enactment to Langer's (1989) theory of mindfulness.

## Scripts: The linking pin between enactment and mindfulness

### The enactment of scripts

Weick employs the broader construct of causal map because his focus is on organizing and sense-making. Causal maps are the product of social actors' enactment and depict how various elements are causally related (Weick, 2001). A script can be viewed as a causal map that is used as a recipe for behavior (Ashforth & Fried, 1988). Put another way, a script is a causal map that guides not only understanding but behavior. Barley views scripts as "behavioral grammars that inform a setting's everyday action" (1986, p. 83). The term "grammar" implies a certain sequence of behavior. Gioia and Poole elaborate on the importance of sequences in scripts, defining "script" as "a schematic knowledge structure held in memory that specifies behavior or event sequences that are appropriate for specific situations" (Gioia & Poole, 1984, p. 449). Ashforth and Fried (1988, p. 306) define script as "a cognitive structure that specifies a typical sequence of occurrences in a given situation." Therefore, "sense-making" — the enactment of meaning — is the process of making sense of experiences by tracking the sequence of events. These theorists' conceptualizations of scripts validate our view of scripts as a subset of causal maps. Given our focus on specific ICT related *behaviors*, scripts are more useful than causal maps.

Over time, certain scripts perform more consistently than others, even across different contexts; thus they come to be preferred. This is "selection" in Weick's terminology (1979). Individuals' reports of ICT practices are examples of scripts in this research. The prevalence of certain scripts over others is at the very core of selection and retention.

### The invocation of scripts

The invocation of a script results in behavior that is meant to be appropriate for the situation. We can read in the newspapers "he invoked his rights to counsel." Our employment of the term is similar. By invocation we mean to call upon a law or rule; that is, for our purposes, to engage and bring to bear this previously created and stored script. We use the terms "invoke" and "invocation" rather than terms like "use" or "employ" because we want to focus attention on the process of engaging the stored scripts. Since scripts are created as a shortcut that allows one to take action based on just a limited part of the available information, using a script invariably reduces one's level of awareness or mindfulness in any given context (Gioia & Poole, 1984). Invocation, therefore, focuses attention on the instantaneous script engagement process, while use implies a continued consciousness that often is just not there.

We now turn to the issue of conscious or unconscious processing—that is, mindfulness or mindlessness.

### Mindfulness and mindlessness

*Mindfulness* can best be understood as "the process of drawing novel distinctions" (Langer & Moldoveanu, 2000, p. 1). People who are mindful of what they are doing often behave quite differently from people who act mindlessly (Langer, 1978); although under unaltered conditions one would be hard-pressed to notice any difference between the two. Langer's concept of mindfulness fits with the work of Burgoon and Langer (1996), who have defined mindlessness as "lim-

ited information processing, rigid categorical thinking, single perspectives, and failure to recognize context" (p. 107). (When people are mindless, they "treat information as if it were context-free — true regardless of circumstances" (Langer, 1989, p. 3)).

Repetition and familiar situations move us toward mindlessness, yet all of us learn through repetition. The problem is that, with each repetition, less and less information is processed (Langer, 1978). The creation of meaning, sense-making, learning, and "the drawing of novel distinctions" are mindful behaviors, but "once distinctions are created, they take on a life of their own. . . . The categories we make gather momentum and are very hard to overthrow" (Langer, 1989, p. 11). Thus we have moved from the mindful enactment of categories and scripts to the mindless invocation of them. As Langer nicely put it, "We build our own and our shared realities and then we become victims of them — blind to the fact that they are constructs, ideas" (1989, p. 11). Ashforth and Fried (1988) argue that given the repetitive nature of many tasks, much organizational behavior occurs quite mindlessly. Burgoon, Berger, and Waldron (2000) would agree, asserting that much interpersonal communication occurs mindlessly. Repetitive tasks such as checking our email and selecting a communication medium for each interaction are apt to become mindless behaviors. Since social actors have limited communication capacity for processing information (Broadbent, 1958; Shannon & Weaver, 1949), people process information selectively, causing them to also ignore information (Langer, 1978, 1989).

Mindlessness can also be viewed as entrapment by categories (Langer, 1989). That is, we attend to only a limited set of available cues — the evoked set (Abougomaah, Schlacter, & Gaidis, 1987) — while ignoring other cues that might let us draw novel distinctions. As summed up by Timmerman (2002, p. 114), "Mindlessness is a state in which one does not attend to information in the environment, but rather behaves in an automatic fashion, minimally attentive to behavior." Mindlessness can stem from various things: (a) overlearned behavior, (b) cognitive commitment, (c) reliance on existing categories, and (d) limited attention paid.

It is also worth noting that in most of the writing on mindlessness and mindless behavior there is an implicit assumption of linearity. That is, social actors observe some familiar cues that trigger a script and lead to a specific mindless behavior that, according to the script, fits the situation. But it might well be that these cues that social actors observe, trigger a set of scripts that in turn focus their attention toward certain types of information, like trying to confirm that a particular script fits, and away from other types of information, like what is unique about this situation or event — information that might require modifying a script or even using a completely new one. Such an explanation fits well with Weick's (1979, 1995, 2001) notion of retrospective sense-making. Distinguishing between mindful and mindless enactment and mindful and mindless invocation of enacted scripts yields a deeper understanding of organizational behaviors.

The relationship between these key concepts is illustrated in Figure 1.

Enactment is usually mindful as social actors co-create their own working environments; however, sometimes people are less than fully mindful of how they enact their environments. That is, elements of mindlessness creep into the enactment process. One of the outcomes of this enactment process is scripts. Scripts are recipes for behavior. These recipes are triggered or invoked by some cue, and the social actor does not process the rest of the available information but acts based on the script, thus preserving cognitive capacity. The invocation of scripts is inherently mindless, and is designed to be mindless. However, sometimes mindfulness creeps into this process, for example when changes are noticed.

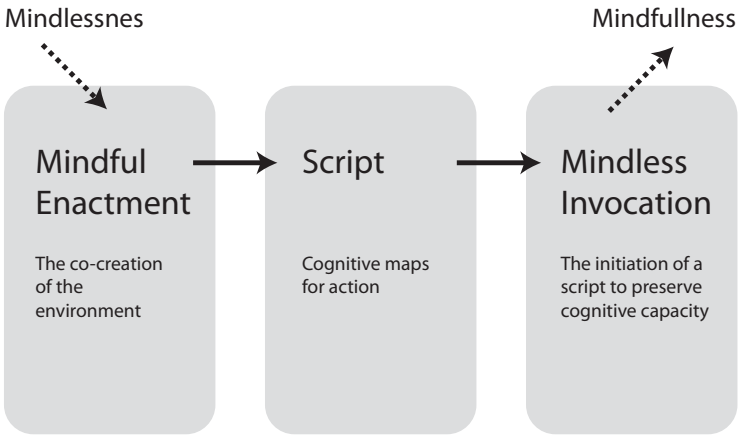


**Figure 1. The Relationship between key concepts**

# Methodology

The research presented here is part of a larger investigation of ICT use in the workplace in Norway and the United States (see also Sørnes, Stephens, Sætre, & Browning, 2004). Data collection for this study began in the fall of 2000 and ended in the fall of 2002. During that period, four researchers conducted 67 individual interviews. The interviewees were chosen based on their reputation as advanced ICT users within their fields. We sought early adopters and key opinion leaders in their fields. At the end of the interview we asked if they knew of other advanced users that they would recommend we talk to, thus generating a snowball sample (Biernacki & Waldorf, 1981; Johnson, 1990). When choosing informants in this manner, we are not randomly sampling from the universe of potential informants. Rather we are selectively sampling the specialized knowledge of the topic that these informants possess (Johnson, 1990).

Social information-processing models dictate that social context determines ICT use. Our goal was to use a broad sample of individuals from different firm sizes and types so that the social effects would be neutralized as much as possible in our data set. We chose ICT users from a wide range of professions and organizations — a cross-section representing different industries, functional areas, professional and organizational tenure, and gender. Our respondents were quite diverse with 71% being male, 68% of them being from established (as opposed to entrepreneurial) organizations, and 36% being managers, and they represented 34 organizations from the United States and 30 from Norway. They represented industries such as banking, hospitals, software development, government agencies, management consulting, fish farming, higher education, water purification, semiconductors, farming, e-learning, and sales. Of our interviewees, 30 were from service industries while the remaining 37 were from product-related industries; 23 were managers and 44 were non-managers; 34 were from Norway and 33 from the United States; 30 were from small companies and 37 were from large companies. Table 1 summarizes the background of the interviewees.

**Table 1: Background of interviewees**

| | | Product | | Service | |
|---|---|---|---|---|---|
| | | Manager | Non-Manager | Manager | Non-Manager |
| Norway | Small Company | 5 | 5 | 2 | 0 |
| | Large Company | 5 | 8 | 0 | 9 |
| United States | Small Company | 3 | 3 | 5 | 7 |
| | Large Company | 2 | 6 | 1 | 6 |

The one thing they all have in common is a reputation within their field, and among colleagues, of being an advanced user of ICTs. The heterogeneity of our data allows us to draw more general conclusions about ICT use across different contexts. We selected advanced users because, in addition to being articulate about their practices, these users are opinion leaders.

Each interview lasted 45–90 minutes and was audio-recorded and transcribed, resulting in some 2,500 pages of text. To facilitate our subsequent data analysis, we translated the Norwegian data set into English and double-checked everything for semantic and contextual accuracy. Then, for our analysis, we printed the Norwegian interviews with Norwegian and English translations side-by-side.

The in-depth interviews were loosely structured. Because this research involved multiple sites and multiple interviewers, it was especially important to employ a similar format for the interviews, developing a common framework and maintaining cross-case comparability (Miles & Huberman, 1994). The structure of our interview guide also permitted us to exploit any opportunities that presented themselves — a method that is flexible and that favors adaptation to each context and individual (Miles & Huberman, 1994). Our interview guide contained a handful of topics that provided a baseline for adapting the interview to the unique opportunities that presented themselves in each interview. Our topical questions were: Could you walk me through a typical day; how do you use the internet; how do you use email; how do you use ICTs for internal communication, and how do you use ICTs for external communication; what is it critical in making this communication work; how do you use ICTs to build and maintain relationships inside and outside the organization; if you were to be more effective in your ICT use, what would you change. The interviewer would typically just introduce a topic and then would provide a transition to the next topic when needed.

The data was categorized by multiple coders. The data was initially coded using a simple spreadsheet; subsequently it was coded using Nvivo. We used a constant comparative analysis (Glaser 1998; Glaser & Strauss, 1967). This approach assumes that "categories, concepts, and theoretical levels of analysis emerge from researchers' interactions with the field and questions about the data" (Charmaz, 2000, p. 522). The strength of this method is the inductive progression from detail to abstraction (Browning, 1978). Our process started with a line-by-line analysis of the 2,500 pages of text, where we (1) identified incidents, which were then (2) categorized (Glaser 1998). Incidents would range from short sentences, such as *"I always check my email before I start working,"* to short paragraphs. The complete data set consisted of 24,000 incidents. Through the

coding process this was reduced to 6,000 ICT-related incidents. The coded data was used as a database for searching for relevant incidents. The coding process yielded intimate familiarity with the data that facilitated the selection of soundbites from the interviewees used in this study.

The method employed in this study can best be described as iterative grounded theory (Orton, 1997, 2000), an approach where the researcher, using an iterative process, gradually moves from primarily dealing with data and theoretical categorization to focusing primarily on analysis (Orton, 2000). Among the best-known examples of this type of analysis are: Allison's (1969) analysis of the Cuban missile crisis, Perrow's (1984) analysis of "Normal Accidents" in organizations, and Weick's analysis of the Mann Gulch forest fire (1993).

In our analysis we worked with data and theory simultaneously, and theory and data fed off each other into our analysis process. This process is described as a "back-and-forth character in which concepts, conjectures, and data are in continuous interplay" (Van Maanen, Sørensen, & Mitchell, 2007, p. 1146). They go on to say, "If one thinks of concepts and conjectures as existing on a conceptual plane and of data residing on an empirical one, the more links and the more varied the links between the two planes, the more promising the research" (p. 1146). From the iterations between extant literature and our data, the following overarching research question emerged:

*How is media use enacted in organizations?*

The iterative grounded-theory method employed in this study is illustrated in Figure 2.

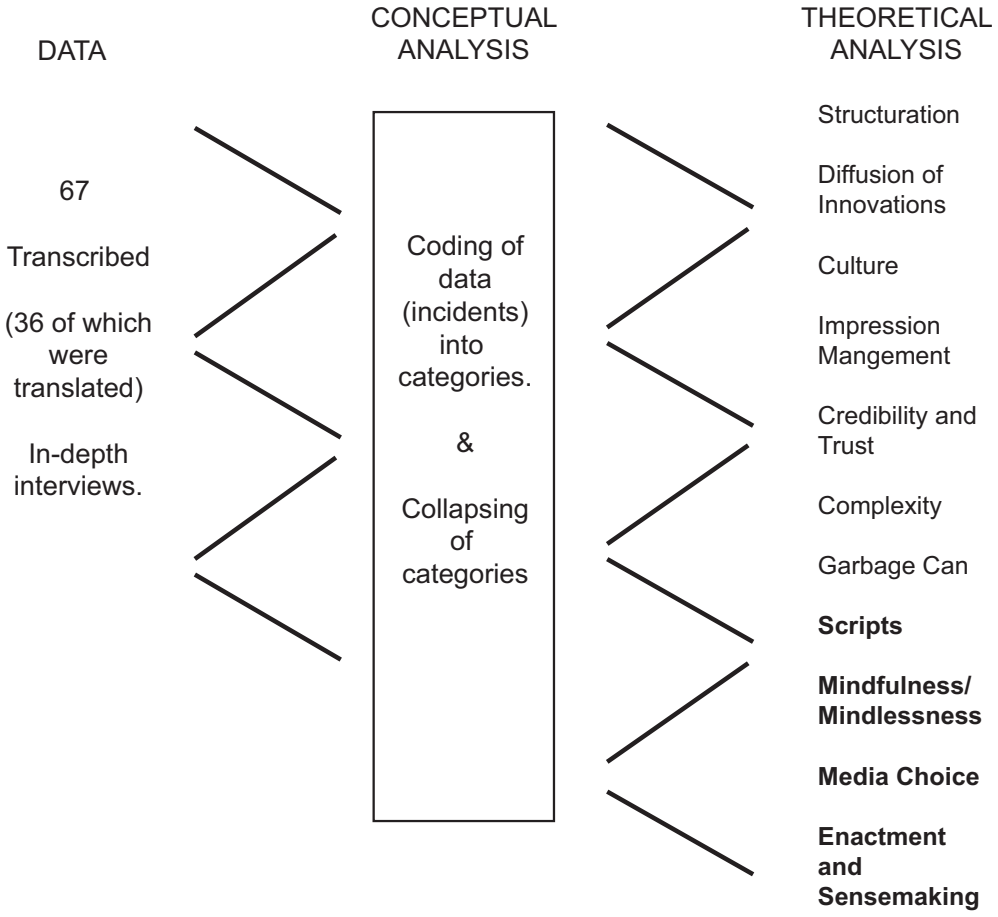


**Figure 2: Iterative Grounded-Theory Methodology**

Iterations occurred both within each kind of analysis (the coding and collapsing of categories occurred over several iterations, as we moved between individual incidents and the various categories created) and between both the conceptual and theoretical analysis. It also occurred with the data itself, as we continued to revisit the categories as well as the raw data in our theoretical analysis. Our analysis gained power through these iterations since we considered the multiple implications of each of these theories for our focal issue. Practically speaking, each incident is held up to several theories in order to find which of these theories best explains or predicts each incident (or behavior). Naturally there are times when an incident can be explained by multiple theories, forcing the researcher to choose one over the other. In such cases we exploited the fact that we were multiple researchers and gained useful insights through the deliberation of such instances. The methodologist Donald T. Campbell argued that if a social scientist tries out multiple theories to explain the focal issue before finding one that fits, "he has tested the theory with degrees of freedom coming from the multiple implications of any one theory" (1975, p. 182). Herein lies the strength of iterative grounded theory.

The purpose of (iterative) grounded theory is to operate as a reflexive practice whereby naturalistic data drawn from the field informs theoretical concepts in place. It is also designed to inform the understanding of practice by applying theories already in place to the understanding of practice. To display our data, we selected vignettes or narratives from the interviews that contain accounts relevant to our proposed conceptual framework. We used the researchers' intimacy with the data, as well as searches of our database, to select the narratives used for analysis in this paper. Selecting such vignettes places a heavy burden on the academic integrity of the researchers to select soundbites that are representative, not of any kind of average, but of what the informant purported (see Punch, 1986, for an extended discussion). We searched for examples of our three central theoretical constructs: enactment, scripts, and mindfulness/mindlessness. This is consistent with Glaser's (1978, 1998) view that researchers may flexibly draw on, and construct frameworks based on, the theoretical leads suggested by their data. Similarly, Strauss (1970) states that while the emphasis in the 1967 monograph with Barney Glaser was theory generation, its analytical style could also be used in the context of previously developed theory — so long as it had been carefully grounded in research.

As researchers, we acknowledge that it is difficult to talk about mindlessness in behaviors after asking all our interviewees to be mindful of their own behaviors as ICT users. Due to retrospective sense-making, we expect that interviewees will make sense of even their mindless behavior as they tell us about their actions and their reasons for acting (Weick, 1995). However, through such self-reported examples we can provide plausible evidence that routines are established and result in ICT use that happens without much consideration. Indeed, social actors are often mindful of some aspects of a situation, but, as we will show, they are often not mindful of other, possibly more important, aspects of the very same situation. Hence we can show, at least in part, examples of mindless behavior in organizations.

Enactment is a "supercategory" that permeates the data set. Because we ask interviewees to account for their ICT practices, they offer examples of how they have acted in past circumstances; many of these accounts can be viewed as some form of enactment. Our operationalization meant that incidents of enactment would have to include at least the action and the reaction or consequence (either implicit or explicit). For example, a university professor forces students from one e-learning platform to another by gradually reducing the functionality of the old platform. This action (itself a reaction to the availability of the new platform) produces reactions from his students both intended (compliance) and unintended, or at least undesired (complaints), and unintended consequences (such as mounting pressures on his colleagues, from satisfied students, to follow suit). Another example is the young student manager in an upstart company who provided his employees with the latest and greatest communication technologies (action) in order that they

might be able to reach each other at all times. In exchange for this availability they could use the cellphones to call and message their friends, which they did with a vengeance (reaction). This policy and the employees' adaptation of it lead to a blurring of the work-life boundary, both by bringing work into their private lives (at least partially intended consequence) and by bringing their social life to work (unintended consequence).

In our analysis, which we present in the following sections, we couple our theoretical framework with some narratives selected from our substantial pool of raw data. The theoretical frameworks served as a sensitizing device for looking at, interpreting, and analyzing the narrative data (Browning & Henderson, 1988; van den Hoonaard, 1997). The goal of this paper is to understand media use and selection in organizations; the theories are a means toward this end. The close coupling between the data and the theoretical framework is reflected in the following sections.

# Findings: How Media Use is Enacted in Organizations

## *Enacting ICT Practices*

Using our integrated theoretical framework for data analysis, we found examples of enactment, scripts, and mindfulness in all 67 of our interviews. Our data showcase numerous examples of how the individual actors use ICTs as their raw materials and rearrange ICTs to respond to different situations.

Many organizational theorists characterize organizations and their external environments as complex systems that constantly interact (P. Anderson, 1999; Daft & Lewin, 1990). These complex interactions create opportunities for enactment to take place. For example, sales representatives discuss how they adjust their own personal ICT-use scripts to accommodate the needs of their customers. Without an external agent driving their script formation or execution, ICT use would be driven by other exigencies. ICT practices don't happen in a vacuum; they are consciously and unconsciously influenced by the so-called environment. Scripts are a key concept in our study; they sit squarely between enactment and invocation, and they are the linking pin between enactment theory and mindfulness. The list below, provides some examples of ICT-use scripts, and illustrates the diversity of scripts that we found in our data:

- I always check my email before I start working.
- I never check my email until after 2 p.m.; otherwise I never get anything done.
- I always fax my orders because emails get lost.
- You can always call people's work cellphones, and if they have not turned them off they are on call.
- I always use face-to-face communication when a decision is involved.
- I never use pagers with customers until I really know them.
- Always use the Internet to do research in preparing for a meeting.
- Use email to build trust in the sales process.
- Always use face-to-face communication to build trust.
- I always use email.
- Voice-mail and phone are most efficient for internal communication.

- In a trusting relationship use a 4:1 ratio of electronic communication and face-to-face.
- Always use face-to-face to check that new people are real (and not some hacker in a basement).
- Always avoid using physical paper.

## *Enacting Mindfully*

If we place enactment on a continuum ranging from highly mindful to completely mindless, we can learn more about ICT use. For example, on the moderately high end of this mindfulness continuum is an example of ICT use where successful practices were actually appropriated from others and implemented in new organizations. A staff member at a college in Norway related how a group from his college went about constructing its Web pages — a project that involved their collaborating with an external Web-design firm. "We tried to describe to this little company what we were aiming for," the person recalled. "In doing this we have stolen shamelessly from all the other solutions on the market." These people clearly were mindful of how they wanted to present their organization to the higher-education market, so the environment itself became part of how the college sought to establish its own identity (set itself apart) in that market (the environment). But it is not evident how mindful they were that by looking mostly at colleges and small universities similar to their own, they were not only setting themselves apart but were also communicating membership in that group by using similar structures and design elements on their own homepages.

Most literature focuses simply on the mindful enactment of ICT-use scripts. But there is a much wider range of mindfulness. One of our American interviewees had a very clear script for how to search for novel and hard-to-find information for a management consulting company. "I probably use Google very systematically 20 times a day," she reported. "And *anything* [emphasis added] that I want to know about, I'll do a Google search." That last statement makes clear that this is, in her mind, a reliable method or script for finding information — so reliable, in fact, that she invokes it every time she needs to learn something. Although she was fairly mindless about the specifics of her search when invoking this Google script, she was certainly mindful when she created it. She told us:

> What Google does — [well,] other engines will return a result as a function of how frequently a certain term is used on that Web site, [whereas] Google looks at how many times a Web site is accessed that has those terms. So you always come up with the most used sites, which are usually the most useful sites. . . . And the real power, I think, from Google is that you have implicitly built into it the wisdom of hundreds of millions of people.

Not everyone, of course, has such faith in the collective intelligence of people. (As playwright Thornton Wilder has one of his characters remark, "Ninety-nine percent of the people in the world are fools and the rest of us are in great danger of contagion" (1954, *The Matchmaker*, Act I.)). Although mindful, at least retrospectively, of why she constructed her own search script when looking for unique and hard-to-find information, she failed to see the irony in her imagining that she had found this precisely where the most people had previously looked for it. Keeping in mind social actors' limited rationality and cognitive capacity, we see that while fully mindful of *some* aspects of her task, she was also quite mindless of other important aspects of it. To a certain extent it is the quality of reasoning behind a choice that determines the degree of mindfulness or mindlessness. (Here, one can easily get entangled in issues, such as intelligence and reasoning abilities, that are well beyond the scope of this paper). That is, what portion of the relevant vari-

ables do social actors pay attention to and include in their reasoning? By "portion," we mean both the relative size (variance accounted for) and sameness (same variable or different ones).

The economy can serve as an ecological change agent and alter the degree of mindfulness about previously enacted scripts. A consultant in the high-tech industry in California's Silicon Valley explained to us how a protracted economic downturn affected people's use of ICTs: "Well, certainly, in our firm there's a lot less travel, and so there's a lot more emphasis on electronic communications." This interview also shows that ecological change (downturn in the economy) increases mindfulness of certain elements like cost, leading to decisions like this: "It's not cost-efficient to travel to Atlanta, so let's have a video conference instead." Furthermore, events like 9/11 increased people's awareness of the risks of traveling, not to mention the cost of air travel (in both money and time) due to increased security measures.

In sum, whereas previously there would have been a meeting in Atlanta, under these altered conditions there wasn't one. In other words, ecological change led social actors to be more mindful. On average, social actors are now more mindful of certain variables, such as what media to use, than they were before the ecological change. This increased mindfulness typically comes at the cost of downplaying other variables, such as the nature of the meeting (level of ambiguity, urgency) and other variables previously considered more salient than they are now.

This is largely due not only to our bounded rationality (March & Simon, 1958) but also because we, at a meta-level of bounded rationality, are willing to give such decisions only a finite amount of time and consideration, or cognitive effort. We are thus seeing a shift of the variables that constitute the enactable environment. Mindfulness, in other words, does not necessarily mean that mindful social actors are paying attention to more variables than they usually are; they might just be paying attention to *different* ones. In other words, an increased degree of mindfulness occurs when social actors pay attention to and act upon more variables and/or different variables than they usually do.

In a world of constant change and bounded rationality the question is how many variables, or how large a portion of variables, and which portion of variables must social actors pay how much attention to before their behavior is considered more or less mindful?

Prior research has largely treated the enactment of scripts as mindful and the invocation of scripts as a relatively mindless exercise (Ashforth, & Fried, 1988; Burgoon, & Langer, 1996; Gioia & Poole, 1984). But our own data argues for a more complex view. Not only are there different levels of mindfulness in ICT script invocation and use, but the enactment of scripts can also be more or less mindful. In our examples, mindful social actors, when selecting their communication media, actually consider at least some of the criteria spelled out in media-choice theories: opportunity for fast feedback, ability to convey multiple cues, opportunity to tailor the message to the situation, and ability to convey ambiguous and subjective material.

## *Mindfulness and Media Choice*

One of the most prominent mindful ICT themes in the data concerns the prevalence of face-to-face communication in important or emotional situations. The usefulness of face-to-face communication was consistent, in both our Norwegian and U.S. interviews, in two types of situations. One was when initiating a relationship (say, with a potential customer), and the other was when closing a deal. In both situations, the common script was, "Use face-to-face communication." A U.S. salesperson explained, "If a customer has any sort of emotion, if it's a subject that's emotional, whether positive or negative, I'll go see him, because in sales *every* decision is emotional." This person is mindful of the power of the "face-to-face to close deals" script, because he sees every closing or decision as emotional, and emotions can best be dealt with through rich communication channels, or media, such as face-to-face (Daft & Lengel, 1984, 1986). He is also enact-

ing his own work context by setting client expectations through his media choices. If he switches to a leaner medium, like email, that very switch will convey a message in itself (Sitkin, Sutcliffe & Barrios-Choplin, 1992). However, if he is practicing his "every decision is emotional" belief, he will end up rather mindlessly using rich media where common sense as well as media-choice theories would dictate the use of leaner media.

One of our Norwegian respondents offered some additional insights into the script for reaching an agreement and closing a sale. This person was a sales-and-marketing director for an IT firm offering "real-time" solutions. Over 70% of his contacts with customers were by email. Nevertheless, he pointed out that the most important part of the customer relationship takes place in person: "Face-to-face is a must in the initial stages, throughout the process to resolve conflicts or disagreement, and in the closing of a sale." Not only does he include the deal-closing script, but he also extends the script to include using face-to-face for initiating relationships. Furthermore, he is acutely aware of why face-to-face is so useful in the closing of a deal: "Email is not suited to deal with conflicts, because it is too rigid." What our informant calls "rigid," media-choice theories call "lean," referring to the lack of ability to pick up on multiple cues, delay in feedback and so forth. In this sense, rich media are more flexible than lean media.

The next examples shed further light on the enactment of the face-to-face script. An American interviewee who conducted a fair amount of international business told us, "For a decision of any size, I think, in almost every case, there's got to be at least one or two face-to-face meetings." This person had a colleague who also worked internationally, and they both had found that in closing such deals, face-to-face communication was essential. "It's rare that a deal gets concluded without face-to-face," that colleague told us. The following U.S. example from a person who conducted most of his business domestically makes a similar point:

> If they're going to spend that kind of money, they're going to want to meet our sales people, our sales managers, our vice-president, and our executives. The bigger the deal, the more face-to-face time it requires. . . . In our industry there's a lot of CEOs who spend half their time just closing deals.

Our interviewees not only recognized a "face-to-face for closing deals" script, but also recognized that it is ubiquitous within the industry. The ubiquity of this script can also indicate that there are elements of mindlessness at play, but more likely it is a result of an almost universal recognition of the ambiguity and equivocality associated with substantial procurement decisions.

Face-to-face communication is considered appropriate for dealing with emotion and conflict since it lets us pick up on multiple, and perhaps conflicting, cues as well as allowing for flexible communication and immediate feedback (Daft & Lengel, 1984, 1986; Lengel & Daft, 1988; Rice, 1993). For initiating relationships and closing deals, face-to-face communication is preferred by several of our interviewees both in the U.S. and in Norway. In both the initial stages of a relationship and when closing deals, uncertainty and ambiguity are high, so richer media prove more appropriate (Daft & Lengel, 1984, 1986). However, as we shall see, not all media choices are the results of mindful behaviors.

Some enacted scripts result from mindless behaviors. One counselor in continuing education (executive education) at a university in Norway told us of how he and his colleagues used various media. With colleagues in the same building, they used a combination of face-to-face and electronic media, but with colleagues officing in the adjacent building, almost all of their "discussions and communication happened through email." These people followed the same script: if they needed to communicate with their colleagues in the other building, they would use electronic media because it felt too far to walk. They paid far less attention to the content and purpose of the communication than to the physical distance. It is not even physical distance, as that could often be the same as with people within the building; it was more the "barrier" of going from one build-

ing to another. While this example illustrates some mindfulness in their choice of email, it also shows a certain level of mindless script invocation. In other words, they attended to only a few or one of the available cues (another building), and ignored other and perhaps more important cues (content, context, and purpose of the communication). This selective cuing supports the conclusion that there are levels of mindfulness to be found in ICT use. Structures — in our case, scripts — are only created and can only exist through practice (Giddens, 1989: Orlikowski, 2000). Through their practice of not bothering to walk over to the adjacent building, organizational members have unconsciously enacted two media-usage scripts: one for colleagues in their own building and one for colleagues in the other building.

Similarly, the U.S. salesperson who viewed decisions as emotional placed a premium on face-to-face communication and mindlessly enacted a script:

> My philosophy is very simple: If I have an opportunity to meet with a customer, I will drop everything else because it's more important. And even if I spend two hours and only get five minutes' worth of information.

He went on to say that he might ask quick questions on voice mail, or even send an email "if it is unimportant," but if he thinks the information has "any significance" he will definitely use face-to-face. He does not believe that leaner media are complementary to rich face-to-face communication. This assumption leads him to use rich media in situations where media-choice theories would predict leaner media usage. For him, leaner media are useful only for trivial, short messages. This script — the superiority of face-to-face communication at all times — leads him to spend maybe 120 minutes to get something that might otherwise have taken five minutes, but he finds the time and effort spent are worthwhile. Although he thinks he is mindful ("I do this because everything is emotional, and emotions can only be dealt with face-to-face"), he is in fact largely mindless (he ignores any cues that might lead him to use leaner media, such as receiver preference, convenience, speed, availability of media, and so forth) when invoking this script that leads him to utilize an inappropriate medium, at least according to media-choice theories (Daft & Lengel, 1984, 1986; Fulk, Steinfield, Schmitz, & Power, 1987; Sitkin et al., 1992). The initiative to act face-to-face, even though it involves a significant allocation of resources, is less mindful than routinely considering several variables. An alternative explanation is that he can be mindless — and automatically choose to use face-to-face communication — because he knows that face-to-face is a "mindful" medium with many simultaneous cues. In short:

> *Whenever a high degree of mindlessness influences media choice, media-choice theories are less than predictive.*

This assertion supports Timmerman's (2002) argument that media-selection theories, such as media richness, and social-influence theories are non-predictive unless one considers the mindlessness/mindfulness of the actor. Specifically:

> *Whenever ecological change has taken place in such a scope or scale that media choices should, according to MCT, be affected but social actors are not mindful of these changes, then media choice theories are non-predictive.*

In other words, it is not the mindlessness per se that renders media choice theories non-predictive, it is the mindlessness combined with the scale and scope of ecological change that has the potential of rendering MCT non-predictive.

## Unintended consequences as an indicator of less than mindful enactment

Some mindful script invocations begin with one objective and result in novel unintended consequences that may or may not be desirable. There are many examples of informants deliberately

enacting ICT scripts. But we also see examples where mindful ICT use creates new problems. Consider the case of a Norwegian college professor who used technology to impose a specific learning experience on his students. Wanting his students to employ the "superior" software, he deliberately reduced the functionality of a previously used software application so that they had to use a new software package to complete some course assignments. But this mindful creation of a learning environment had unforeseen consequences. He discovered that the word traveled fast about his requirements, and students monitored whether friends in other professors' classes were being required to do the same thing. And some students "started to question why others did not do it." The professor kept an eye on these misgivings and noted the mounting pressure on his colleagues to do the same, which was good, he thought, since it placed him "ahead of the game" — something that appealed to his desire to be on the cutting edge. In this example, the professor thought he was creating — mindfully enacting — a better learning environment for his students, but he also affected the working climate for the colleagues in his own department as well as for the university at large by raising the expectations of students. In this example we see a new work environment being enacted; part of it has been mindfully enacted while another, not insignificant, part has been enacted through unforeseen consequences, which arguably then was less than mindfully enacted.

Another example of unintended consequences is provided by one of the IT firms in Norway that sought to create a mutually beneficial exchange relationship with its employees. The firm provided each employee with a free cellphone; in exchange, the firm claimed the right to contact employees 24/7 to request help in solving company problems whenever they arose. As our interviewee said, the firm "had a "crystal-clear policy: when the cellphone is on, we can call them anytime, day or night." Say, for example, the firm developed problems with some software code. They would promptly "call the number [of some employee], and if the cellphone is on, which it often is if you use the number for all your friends as well, then we reach the person." The motivation for this policy was quite clear, as was the incentive for programmers to leave their cellphone on.

But this policy, and the firm's free exploitation of it, enacted an environment that virtually erased any distinction between company time and private time. This led to people feeling that they were never really off work. Our interviewee, one of the founders of this company and an institutor of the cellphone policy, solved the problem this way: "So I often turn the phone off for a whole day, to people's great irritation. It is one way of doing it —s o people can choose between free phone and at the same time be called." One might be mindful of what is intended by a certain behavior, in this case a cellphone policy, but one is not able to foresee all the consequences of the policy — thus the dramatic exchanges he describes. This example shows that not only are there stages to enactment, but it is in fact an ongoing process. As social agents, we are never done enacting. We are always transacting with others, and through our transactions with others we are continually enacting new contexts, environments, and scripts, or modifying existing ones.

Further illustrating this point is an example from a Norwegian dairy-and-pig-farming couple who had invested heavily in farming technologies and ICTs to increase the efficiency of their farm. Their investments, they told us, had led to a new kind of problem because of the special requirements of the technology: "We can't call the relief worker — ring just to say that now we want a relief worker. That doesn't work for us [anymore]. There is too much technology in our cowshed for doing that." Their new work environment was enacted by using pretty standard computer equipment and software and implementing it in a novel context. The new farming environment that they had enacted through their investments in high tech created a new "environmental" problem in that relief workers with the right set of competencies proved hard to find. In this case, enactment that generated one kind of opportunity also restricted other options. The farmers had increased their productivity while easing their workload, but had in effect restricted

their ability to easily leave the farm for extended periods. They felt trapped. Our study shows that enactment of ICT scripts can have substantial unintended consequences, showing that even in enacting scripts there are degrees of mindfulness.

Our findings regarding mindfulness and the unintended consequences of ICT-related behaviors can be summarized as follows:

> *Given the finite capacity for social actors to process information (bounded rationality), even mindful ICT behaviors can have substantial unintended consequences.*

In fact, it is likely that:

> *Mindful ICT behaviors more frequently result in unintended consequences than do mindless ICT behaviors, given that mindful behaviors often are caused by noticeable ecological change, and that mindless behaviors most commonly occur under unaltered conditions.*

Under unaltered conditions the rather mindless invocation of existing scripts has proven a successful way of preserving cognitive capacity.

## *The Enactment of Media Richness*

While many interviewees spoke of their media preferences and experiences, many also discussed how they enacted the richness of a certain medium. The enactment of the richness of one medium took place through the use of a different, often richer, medium, or by using multiple media. One Norwegian executive education counselor explained that when there is no relationship established, he is mindful of how he crafts email messages: "I do relate more formally to this person [someone new] in written form, and I am more careful then … because I will spend time on formulating myself in a good way." Phrases such as "relate more formally," "I am more careful," and "spend time on formulating myself" indicate a high degree of mindfulness when communicating. As the actors interact, they enact or co-create a relationship that consists of trust and, to various degrees, mutual understanding:

> What I say is that it is easier. For example, some project managers I have been working with for three to four years now, and they know me very well … and I am much more effective towards them than I am towards others.

Being "effective" means "achieving more with fewer words and less time spent carefully crafting messages. The communication, and hence relationship, becomes more effective. Social actors enact, through the use of interaction and multiple media, the richness of a lean media such as email. One international policy advisor stated:

> I know some people very well because I have met them physically on many occasions . . . We have established a relationship–a working relationship. But I do feel that the use of the Net [email] is much easier now when I know the people from the physical meetings. I can write them in another way.

In this case, the use of one medium — face-to-face — affects the perceived and experienced richness of another—email. This relationship, enacted over time through the use of multiple and rich media, facilitates communication. In this example we have seen the enacting of increased richness of a lean medium (email) through the use of a rich medium (face-to-face).

Say you learn that a person is laidback but really sarcastic, too, so you read his emails a little differently than you read other people's. Then one day you receive an email from him that you don't understand, so you give him a call about it. He explains that it was an understatement. Suddenly it all makes sense. Not only does it make sense, it is also amusing. As your relation-

ship progresses in this manner, you jointly negotiate (enact) the use of email as a richer medium than might be assumed under media-richness theory (Daft & Lengel, 1984, 1986) and social-information processing theory (Fulk et al., 1987).

A famous illustration of "enacted richness" is the correspondence between Victor Hugo and his publisher following the publication of his novel *Les Misérables* in 1862. Hugo sent his publisher a card containing only the symbol "?". In return he received a card from his publisher containing only the symbol "!". Within the enacted context of Hugo's relations with his publisher (and the public's reaction to the novel), these single-symbol messages were loaded with meaning; lacking such an enacted context, such messages would be utterly meaningless. By using rich media and through frequent interactions, social actors can and do in important ways enact augmented richness of what we would traditionally label lean media.

The use of a rich medium, such as face-to-face communication, to increase the richness of leaner media can also be seen in the following example. An American interviewee confessed: "I will spend a lot more personal time with somebody I don't know. I will very rarely page a new customer." He doesn't feel that it is appropriate to use leaner media until a relation is established. "I will very rarely send them emails until I get to know them," he says. Before he could use leaner media such as email and pagers, he needed to "build confidence and trust within that individual." Once he had done that, then "it's acceptable to send them pages, send voicemails, or emails. But I try to keep that to a minimum until I really feel comfortable with them as well as they feel comfortable with me." Through the use of face-to-face communication he enacts a relationship that allows him to subsequently use leaner media in the relation. But media richness can also be enacted through the repeated use of a leaner media. For example, J. Campbell (2006) found that regular use of videoconferencing by high-apprehension individuals led them to perceive the medium as richer. It's reasonable to expect that at least a part of this increase was due to enacted richness.

One of our Norwegian respondents who does a lot of her business internationally has met most, if not all, of her worldwide contacts in person. Meeting people face-to-face is important to her, she says, because "then [you] have a tie that makes it much easier to get in touch with them." Not only is it easier to understand and communicate with people you have actually met face-to face, but this enacted understanding helps determine how to approach a conversation, "because then you know what [sort of] guy this is—if the guy is very formal or informal." She says that having once met a person, she knows if it is someone she can "joke around" with. This kind of personal understanding is difficult to enact through leaner media. Understanding just what kind of person you are communicating with is important, she says, because "if you communicate with some group in the U.S., then you know who you can joke with when it comes to [named U.S. president] and not." She says that this is important to know, because if you don't, "you should not take the chance either." Enacted personal relationships allow for both greater flexibility and understanding as well as improved effectiveness of communication.

In these examples, we find social actors considering at least some of the elements of media-choice theories — opportunity for fast feedback, ability to convey multiple cues, opportunity to tailor the message to the situation, and ability to convey ambiguous and subjective material — when selecting their communication media. More importantly, however, is that in all these examples we see social actors striving toward leaner and more efficient media replacing the richer, and more time-consuming, media such as face-to-face. In other words:

> *The richness of a particular medium is not only a function of the objective media characteristics, or the collective perception in a group of that media, but it is also a function of how the richness of those media has been enacted among*

> *the communication participants on previous encounters and through the use of other media.*

That is:

> *Social actors can enact the augmented richness of a leaner media through the use of richer media and frequent interactions.*

and,

> *Social actors can enact the augmented richness of a leaner media through the use of multiple media and frequent interactions.*

This extends our understanding of media choice, since media choice is not only determined by objective media characteristics (Daft & Lengel, 1984, 1986), or the collective perception of a medium in a given social context (Fulk et al., 1987), but also on the enacted richness of a medium between particular social actors.

# Summary and Discussion

This study suggests that the constructs of enactment, scripts, and mindfulness/mindlessness are tightly coupled and thus should be used in concert to better understand ICT use. Our findings support the assertion that ICT-use scripts are co-created between individuals and their environments. These scripts are often enacted mindfully, but mindfulness occurs on a continuum and is influenced by many factors. The most common mindfully enacted script we encountered is that face-to-face communication is preferred for emotional or ambiguous and important situations. We also found that scripts that are mindfully created can become mindlessly invoked and used even when they might be ineffective. Mindful ICT use can also have unintended consequences, both positive and negative. Finally, varying levels of mindful ICT use can affect perceptions and use of additional ICTs.

The rapid changes in organizations today and the ubiquity of ICTs provide organizational members highly enactable environments (Louis & Sutton, 1991). This is very different from the environment found in high- reliability organization (HRO's) where "control" and ability to "act on variables" rather than change produce mindfulness (Weick, Sutcliffe, & Obstfeld, 1999). Our interviewees were articulate about how they enacted new scripts. Though an important part of their ability to articulate this process stems from retrospective sensemaking, it's clear that much of their enactment of ICT usage is mindful (as with the salesperson who always used rich media because every decision is emotional); nevertheless, some was less than fully mindful (as with the consultant who always used Google to find what no one else could find on the Internet). When changes were so subtle or in such a minor aspect of a situation as to escape their notice, we saw that enactment can to a certain degree be mindless (as with the information director who continued to give a printed copy of her electronic newsletter to the people working on the farm even after they acquired a computer, while she emailed it to everyone else). If ecological changes are so subtle as to be almost imperceptible, though over time amount to substantial changes, we find mindless enactment of scripts occurring. This mindless enactment is likely to be so slow that it is better described as *evolution of scripts*. A social actor may eventually become aware of this evolution, and perhaps even the mindlessness of it, especially when the script fails (evolutionary failure), which it inevitably will.

Often the use of previously enacted scripts is automatic and hence mindless, but sometimes a situation will change so dramatically or unexpectedly that even the invocation of a script becomes mindful instead of automatic. (One tragic example captured in our dataset was the mindfulness with which people communicated with one another immediately after 9/11, particularly when the cellphone networks were down or clogged.) In such instances, the mindful invocation of a previ-

ously enacted script becomes either a starting point for enacting a new script or an opportunity for revising the existing one. Figure 3 summarizes this. The two dimensions in our figure are *enactment* of scripts and *invocation* of scripts. Both enactment of scripts and invocation of scripts can be mindful or mindless. (As stated previously, both enactment of scripts and invocation of scripts are on a continuum of mindfulness. The dichotomy used here is only for simplicity, and the terms "mindful" and "mindless" can be considered near the ends of the mindfulness continuum.

| Enactment \ Invocation | Mindless | Mindful |
|---|---|---|
| Mindful | In the face of ecological change new scripts are mindfully enacted that meet the requirements of these altered conditions. Once these altered conditions become normal social actors mindlessly invoke enacted and retained scripts. | In the face of ecological change new scripts are mindfully enacted that meet the requirements of these altered conditions. Social actor aware of conditions for invoking script and of opportunity for refining and revising previously enacted script. |
| Mindless | Subtle changes that lead to the enactment of minor alterations in existing scripts. The mindless evolutionary enactment of scripts, or scripts based on old habits. These scripts are mindlessly invoked in situations that are changed, but similar enough that the same old script is invoked. | When mindlessly enacted scripts meet substantial ecological change. Leads to either termination of existing script or the mindful enactment of new, more appropriate scripts. |

**Figure 3: Mindless and Mindful Enactment and Invocation of Scripts**

Social actors faced with a new situation or some alteration are more acutely aware of environmental cues and thus strive toward behaviors — communicative or otherwise — that allow them to cope, or even excel, under these altered conditions (as with the IT consultant in a company that was just noted on the stock exchange, so the management of the company was now acutely aware of how they communicated and what they said to whom due to the rules and regulations pertaining to insider information). These mindfully enacted scripts tend to work quite well when these "altered" conditions do not change again. Given stable conditions, mindless invocation of mindfully enacted scripts works quite well (as with most people's use of email to keep in touch with their friends), allowing social actors to ration their finite cognitive abilities.

The mindless invocation of mindlessly enacted scripts may be the most precarious position for people to find themselves in, as it often leads to inappropriate behaviors (as with the consultant who always used Google to find unique information that no one else could find). When behaviors become so inappropriate as to be socially unacceptable (behavioral failure), social actors are suddenly compelled to become mindful of their invoked scripts, (as with the salesperson who always used email to follow up and keep in touch with customers, but with one of them he discovered that he never got any response, and learned that with this person only voicemail worked). This

sudden mindfulness usually leads to scrapping the old script and mindfully enacting a new, more appropriate one.

While this study serves to integrate Weick's theory of enactment and Langer's theory of mindfulness, several opportunities for future research exist. Prior research has theorized the concept of mindfulness/mindlessness, and while this study drew implications from data, actually measuring mindless behavior remains a challenge. Interview data relies on self-reports of behaviors, which means that interviewees are engaged in retrospective sense-making of mindless moments when giving accounts of behaviors, mindless and otherwise. We believe that observational data in combination with interview data would shed further light on issues related to mindless behaviors in organizations, by serving as a check on informants' retrospective sensemaking during an interview.

Another area for future research lies in exploring the unintended consequences of mindful ICT use. Our own findings demonstrate the prevalence of unintended consequences of mindful behavior, but we still know very little about how these unexpected outcomes affect behaviors and ICT use. For example, if highly mindful ICT use results in something unexpected, does that result in the mindful modification of scripts? Studies of disaster suggest that people often do learn from mistakes and unintended outcomes (Weick & Sutcliffe, 2001). As our findings indicate, mindfulness/mindlessness is not a dichotomous variable, but a continuous one. Is, then, the degree of "unintendedness" really just a reflection of the level of mindfulness? Enactment is something that occurs when we are relating to our environments; it's a continually ongoing process. A fair amount of our enacting (with) our environments should occur in a state of more or less mindlessness. Exploring the implications and scope of mindless enactment should prove a ripe field for future research.

The complexity of ICT use is not likely to decrease in the near future. Regularly we find that new ICTs emerge through technology advancement and by the convergence of existing ICTs. As individuals make sense of ICTs, they will continue constructing, using, and modifying scripts. As scholars, our task is to study the scripts, create models of their use, and empirically test those models. It is through our theoretical contributions that we develop sustainable explanations of behavior.

## Some Implications for Practitioners

Organizational members are well advised to be more mindful or aware of how they enact their ICT-choice scripts. Managers might well communicate to their organizational members to be mindful of what media they use and with whom. That is, to be mindful of the attributes and characteristics of each media, and to discuss when each medium is most appropriate in terms of communicating clearly, documenting information, defusing and de-escalating conflicts, and so forth. We see evidence that organizational members tend to favor one medium (email, voice-mail, pagers, and so on) over all others, and this choice then tends to become their default modus operandi, for better or worse. This mindless routine might not be the most effective way to use ICTs as individuals' communication partners have divergent preferences, and as different media are appropriate and effective for handling different situations.

## Acknowledgements

The authors are grateful to Hewlett Packard Inc. for the funding of the original research through two grants. We would also like to thank Bob Travica and two anonymous reviewers for their helpful comments.

# References


Abolafia, M. Y., & Kilduff. (1988). Enacting market crisis: The social construction of a speculative bubble. *Administrative Science Quarterly*, *33*, 177-193.

Abougomaah, N. H., Schlacter, J. L., & Gaidis, W. (1987). Elimination and choice phases in evoked set formation. *The Journal of Consumer Marketing*, *4*(4), 67-73.

Allison, G. T. (1969). Conceptual models and the Cuban missile crisis. *The American Political Science Review*, *63*(3), 689-718.

Anderson, A. R. (2000). Paradox in the periphery: An entrepreneurial reconstruction? *Entrepreneurship & Regional Development*, *12*, 91-109.

Anderson, P. (1999). Complexity theory and organization science. *Organization Science*, *10*(3), 216-232.

Ashforth, B. E., & Fried, Y. (1988). The mindlessness of organizational behaviors. *Human Relations*, *41*(4), 305-329.

Barley, S. R. (1986). Technology as an occasion for structuring: Evidence from observations of CT scanners and the social order of radiology departments. *Administrative Science Quarterly*, *31*, 78-108.

Beyer, J., & Hannah, D. R. (2002). Building on the past: Enacting established personal identities in a new work setting. *Organization Science*, *13*(6), 636-652.

Biernacki, P., & Waldorf, D. (1981). Snowball sampling: Problems and techniques of chain referral sampling. *Sociological Methods and Research, 10*, 141-163.

Broadbent, D. (1958). *Perception and communication*. New York: Pergamon.

Browning, L. D. (1978). A grounded organizational communication theory derived from qualitative data. *Communication Monographs, 45*(2), 93-109.

Browning, L. D., & Henderson, S. C. (1988). One-way communication transfers in loosely coupled systems. In J. A. Anderson (Ed.), *Communication yearbook* (Vol. 12, pp. 638-669). Newbury Park, CA: Sage.

Burgoon, J. K., Berger, C. R., & Waldron, V. R. (2000). Mindfulness and interpersonal communication. *Journal of Social Issues, 56*(1), 105-127.

Burgoon, J. K., & Langer, E. J. (1996). Language, fallacies, and mindlessness-mindfulness in social interaction. *Communication Yearbook*, *18*, 105-132.

Burns, T., & Stalker, G. M. (1961). *The management of innovation*. London: Tavistock.

Cambell, D. T. (1975). Degrees of freedom and the case study. *Comparative Political Studies*, *8*(2), 178-193.

Campbell, J. (2006). Media richness, communication apprehension and participation in group videoconferencing. *Journal of Information, Information Technology, and Organizations, 1*, 87-96. Retrieved from http://jiito.org/articles/JIITOv1p087-096Campbell32.pdf

Charmaz, K. (2000). Grounded theory: Objectivist and constructivist methods. In N. K. Denzin & Y. S. Lincoln (Eds.), *Handbook of qualitative research* (2nd ed., pp. 509-535). Thousand Oaks, CA: Sage Publications.

Choo, C. W. (2001). The knowing organization as learning organization. *Education + Training*, *43*(4/5), 197-205.

Clark, S. C. (2002). Communicating across the work/home border. *Community, Work & Family*, *5*(1), 23-48.

Clark, E., & Soulsby, A. (1999). The adoption of the multi-divisional form in large Czech enterprises: The role of economic, institutional and strategic choice factors. *Journal of Management Studies*, *36*(4), 535-559.

Czarniawska-Joerges, B., & Wolff, R. (1991). Leaders, managers, entrepreneurs on and off the organizational stage. *Organization Studies*, *12*(4), 529-546.

Daft, R. L., & Lengel, R. H. (1984). Information richness: A new approach to managerial behavior and organizational design. In B. M. Staw & L. L. Cummings (Eds.), *Research in organizational behavior* (pp. 191-233). Greenwich, CN: JAI Press.

Daft, R. L., & Lengel, R. H. (1986). Organizational information requirements, media richness and structural design. *Management Science*, *32*(5), 554-571.

Daft, R. L., & Lewin, A. Y. (1990). Can organization studies begin to break out of the normal science straitjacket? An editorial essay. *Organization Science*, *1*(1), 1-10.

Darwin, C. (1872). *The origin of species by means of natural selection* (6th ed.). London: John Murray.

DeSanctis, G., & Poole, M. S. (1994). Capturing the complexity in advanced technology use: Adaptive structuration theory. *Organization Science*, *5*(2), 121-147.

Edwards, J. C., McKinley, W., & Moon, G. (2002). The enactment of organizational decline: The self-fulfilling prophecy. *The International Journal of Organizational Analysis*, *10*(1), 55-75.

Einhorn, H. J., & Hogarth, R. M. (1986). Judging probable cause. *Psychological Bulletin*, *99*, 1-39.

Follett, M. P. (1924). *Creative experience*. New York: Longman.

Fulk, J., Steinfield, C. W., Schmitz, J., & Power, J. G. (1987). A social information processing model of media use in organizations. *Communication Research*, *14*(5), 529-552.

Gallant, L. M., Boone, G. M., & Almquist, G. (2003). Wireless organizational communication: A framework for communicative informatics. *Proceedings of the 2003 Informing Science and Information Technology Education Joint Conference (InSITE)*, Pori, Finland, 1299-1310. Retrieved from http://proceedings.informingscience.org/IS2003Proceedings/docs/159Galla.pdf

Giddens, A. (1989). A reply to my critics. In D. Held & J. B. Thompson (Eds.), *Social theory of modern societies: Anthony Giddens and his critics* (pp. 249-301). Cambridge, U.K.: Cambridge University Press.

Gioia, D. A. (1986). Symbols, scripts and sensemaking: Creating meaning in the organizational experience. In H. P. Simms & D. A. Gioia & Associates (Eds.), *The thinking organizations* (pp. 49-74). San Francisco: Jossey-Bass.

Gioia, D. A., & Poole, P. P. (1984). Scripts in organizational behavior. *Academy of Management Review*, *9*(3), 449-459.

Glaser, B. G. (1978). *Theoretical sensitivity: Advances in the methodology of grounded theory*. Mill Valley, CA: The Sociology Press.

Glaser, B. G. (1998). *Doing grounded theory: Issues and discussions*. Mill Valley, CA: Sociology Press.

Glaser, B. G., & Strauss, A. L. (1967). *The discovery of grounded theory: Strategies for qualitative research*. Chicago: Aldine.

Johnson, J. C. (1990). *Selecting ethnographic informants* (Vol. 22). Newbury Park, CA: Sage.

Kreiner, K. (1989). Culture and meaning: Making sense of conflicting realities in the workplace. *International Studies of Management and Organization*, *19*(3), 64-81.

Kreps, G. A., & Bosworth, S. L. (1993). Disaster, organizing, and role enactment: A structural approach. *American Journal of Sociology*, *99*(2), 428-463.

Langer, E. J. (1978). Rethinking the role of thought in social interaction. In W. I. J. Harvey & R. Kidd (Eds.), *New directions in attributional research* (Vol. 2, pp. 35-58). Hillsdale, NJ: Erlbaum.

Langer, E. J. (1989). *Mindfulness*. Cambridge, MA: Perseus Books.

Langer, E. J. & Moldoveanu, M. (2000). The construct of mindfulness. *Journal of Social Issues*, *56*(1), 1-9.

Lengel, R. H., & Daft, R. L. (1988). The selection of communication media as an executive skill. *The Academy of Management Executive*, *2*(3), 225 - 232.

Louis, M. R., & Sutton, R. I. (1991). Switching cognitive gears: From habits of mind to active thinking. *Human Relations, 44*(1), 55-76.

Manning, P. K. (1982). Organizational work: Structuration of environments. *The British Journal of Sociology*, *33*(1), 118-134.

March, J., & Simon, H. (1958). *Organizations*. New York: McGraw-Hill.

Marziliano, N. (1998). Managing the corporate image and identity: A borderline between fiction and reality. *International Studies of Management and Organization*, *28*(3), 3-11.

McKinley, W., Zhao, J., & Rust, K. G. (2000). A sociocognitive interpretation of organizational downsizing. *Academy of Management Review*, *25*(1), 227-243.

Miles, M. B. & Huberman, A. M. (1994). *Qualitative data analysis: An expanded sourcebook* (2nd ed.). Thousand Oaks, CA: Sage.

Mir, R., & Watson, A. (2000). Strategic management and the philosophy of science: The case for constructivist methodology. *Strategic Management Journal*, *21*, 941-953.

Orlikowski, W. J. (2000). Using technology and constituting structures: A practice lens for studying technology in organizations. *Organization Science*, *11*(4), 404-428.

Orlikowski, W. J. (2007). Sociomaterial practices: Exploring technology at work. *Organization Studies, 28*(9), 1435-1448.

Orton, J. D. (1997). From inductive to iterative grounded theory: Zipping the gap between process theory and process data. *Scandinavian Journal of Management*, *13*(4), 419-438.

Orton, J. D. (2000). Enactment, sensemaking and decision making: Redesign processes in the 1976 reorganization of U.S. intelligence. *Journal of Management Studies*, *37*(2), 213-234|.

Oswick, C., Anthony, P., Keenoy, T., Mangham, I. L., & Grant, D. (2000). A dialogic analysis of organizational learning. *Journal of Management Studies*, *37*(6), 887-901.

Perrow, C. (1984). *Normal accidents: Living with high-risk technologies*. New York: Basic Books.

Prencipe, A. ( 2001). Exploiting and nurturing in-house technological capabilities: Lessons from the aerospace industry. *International Journal of Innovation Management*, *5*(3), 299-321.

Punch, M. (1986). *The politics and ethics of fieldwork* (Vol. 3). Newbury Park, CA: Sage.

Rice, R. E. (1993). Media appropriateness: Using social presence theory to compare traditional and new organizational media. *Human Communication Research*, *19*(4), 451-484.

Shannon, C. E., & Weaver, W. (1949). *The mathematical theory of communication*. Urbana, IL: University of Illinois Press.

Sitkin, S. B., Sutcliffe, K. M., & Barrios-Choplin, J. R. (1992). A dual-capacity model of communication media choice in organizations. *Human Communication Research*, *18*(4), 563-598.

Sørnes, J.-O., Stephens, K., Sætre, A. S., & Browning, L. D. (2004). Leveling differences and reinforcing similarities: The impact of Information and Communication Technologies on national culture. *Informing Science Journal, 7*(1), 1-30.

Smircich, L. & Stubbard, C. (1985). Strategic management in an enacted world. *Academy of Management Review*, *10*(4), 724-736.

Strauss, A. (1970). Discovering new theory from previous theory. In T. Shibutani (Ed.), *Human nature and collective theory*. Englewood Cliffs, NJ: Prentice-Hall.

Timmerman, C. E. (2002). The moderating effect of mindlessness/mindfulness upon media richness and social influence explanations of organizational media use. *Communication Monographs*, *69*(2), 111-131.

van den Hoonaard, W. C. (1997). *Working with sensitizing concepts*. Thousand Oaks, CA: Sage.

Van Maanen, J., Sørensen, J. B., & Mitchell, T. R. (2007). The interplay between theory and method: Introuction to special topic forum. *Academy of Management Review, 32*(4), 1145-1154.

Waskul, D. & Douglas, M. (1997). Cyberself: The emergence of self in on-line chat. *Information Society*, *13*(4), 375-398.

Weick, K. E. (1969). *The social psychology of organizing*. Reading, MA: Addison-Wesley.

Weick, K. E. (1979). *The social psychology of organizing* (2nd ed.). Reading, MA: Addison-Wesley.

Weick, K. E. (1988). Enacted sensemaking in crisis situations. *Journal of Management Studies*, *25*, 305-317.

Weick, K. E. (1993). The collapse of sensemaking in organizations: The Mann Gulch disaster. *Administrative Science Quarterly,* 628-652.

Weick, K. E. (1995). *Sensemaking in Organizations*. Thousand Oaks, CA: Sage.

Weick, K. E. (2001). *Making sense of the organization*. Malden, MA: Blackwell.

Weick, K. E., & Sutcliffe, K. M. (2001). *Managing the unexpected*. San Francisco: Jossey-Bass.

Weick, K. E., & Sutcliffe, K. M. (2003). Hospitals as cultures of entrapment. *California Management Review*, *45*(2), 73-84.

Weick, K. E., Sutcliffe, K. M., & Obstfeld, D. (1999). Organizing for high reliability: Processes of collective mindfulness. *Research in organizational behavior, 21*, 81-123.

Weick, K. E., Sutcliffe, K. M., & Obstfeld, D. (2005). Organizing and the process of sensemaking. *Organization Science, 16*(4), 409-421.

Wickman, S. A., & Campbell, C. (2003). An analysis of how Carl Rogers enacted client-centered conversation with Gloria. *Journal of Counseling & Development*, *81(Spring)*, 178-184.

Woodward, J. (1965). *Industrial organization: Theory and practice*. Oxford: Oxford University Press.

# Biographies

**Dr. Alf Steinar Sætre** is an Associate Professor in the Department of Industrial Economics and Technoloyg Management at The Norwegian University of Science and Technology. His research interests are in the areas of information and communication technologies, organizing, information management, innovation, technology commercialization and new venture creation. He has published articles in such journals as: *Venture Captial*, The *International Journal of Entrepreneurship and Innovation*, and *Informing Science*. He is a co-author of the recent book *Information and Communication Technologies in Action: Linking Theory and Narratives of Practice.* Alf Steinar has a Ph.D. in Organizational Communication from The University of Texas at Austin, where he was a Research Associate at the Institute for Creativity and Capital.

**Dr. Jan-Oddvar Sørnes** (Ph.D, NTNU, 2004), Vice Dean, and Associate Professor in Organizational Communication and program director of the Master of Science in Energy Management program Bodø University College. Jan teaches introductory courses in organizational communication, energy management, and graduate courses in qualitative research methods. His published work appears in journals like Informing Science, Qualitative Inquiry, Case Studies in Organizational Communication, the Anna Lindh book series on conflict prevention, and several book chapters. Jan has co-authored two books titled Information and Communication Technologies in Action: Linking Theory and Narratives of Practice (2004) and Kommunikasjon og Teknologi i Organisasjoner (2007 – in progress).

**Dr. Larry Browning** (Ph. D. Ohio State) is a professor of organizational communication in the Department of Communication Studies and the John T. Jones Centennial Fellow in Communication, College of Communication, University of Texas at Austin. His research areas include the role of lists and stories in organizations, information-communication technology and narratives, cooperation and competition in organizations, and grounded theory as a research strategy. In addition to many articles, he, along with his co-author, Judy Shetler, wrote: *Sematech: Saving the U.S. Semiconductor Industry.* College Station, TX: Texas A & M University Press.

**Dr. Keri K. Stephens** (Ph.D., University of Texas, 2005) is an Assistant Professor in the Department of Communication Studies at the University of Texas at Austin. Her research focuses on workplace ICT use. She studies ICT use sequences, simultaneous and multi-tasking ICT use, and the consequences of working in organizations containing a multitude of ICT options. Her published work appears in *Communication Theory, Communication Education, Journal of Business Communication*, *Journal of Health Communication, Informing Science*, and *Case Studies in Organizational Communication.* She is a co-author of the book, *Information and Communication Technology in Action: Linking Theory and Narratives of Practice*.