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Considering Visual Artifacts in IT Cultures

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ABSTRACT

Visuals carry cultural codes that communicate and reinforce cultural values and assumptions. Visual artifacts such as Powerpoint presentations are a ubiquitous feature in organizational life, but they are not yet widely studied. This paper presents a framework for analyzing visual artifacts that draws on concepts from visual and social science methods. In IT organizations and occupations, visual artifacts are useful tools for introducing, discussing and legitimating cultural assumptions and values for multiple audiences within technology organizations. To gain additional insight into IT culture, researchers should focus on visual artifacts as they are used in professions and organizations in IT.

Keywords

Visual Artifacts; Powerpoint Presentations; IT, Occupational & Organizational Cultures; Interpretive Flexibility; Legitimation

INTRODUCTION

The explosion of computer-based tools for generating and reproducing visual images makes the analysis of visual artifacts, such as those produced using presentation software such as Powerpoint or Keynote, increasingly pertinent for research on IT work and organizations. Unfortunately, in the years since Alan Meyer (1991) called for more analysis of visuals in organizational research, little has appeared (Worren, Moore and Elliott, 2002). Our research methods emphasize the analysis of numbers and text, but sometimes overlook the visual (Stroupe, 2000). We scrutinize what people say and read, but we miss what they *see*. For many technical occupations, this means we also miss a big part of what they *do*. This is particularly true of knowledge-intensive work, where the production and consumption of visual images are integral to daily activities (Goodwin, 1994). Visual artifacts have attracted research attention primarily in the context of occupations that use them as tools, such as design documents for engineers (Bucciarelli, 1988; Henderson, 1995), radar displays for air traffic controllers (Harper and Hughes, 1993), and scans for radiologists (Barley, 1986).

But visual artifacts serve a much broader, pervasive function as symbolic carriers of culture. In this paper, I examine the role of visual artifacts in conveying cultural assumptions, particularly in more fluid or ambiguous situations (e.g., an IT project). I argue that the interpretive flexibility of visual artifacts is particularly useful in situations where there is a great deal of ambiguity or uncertainty. These conditions are epitomized by many situations in the world of information technology. For example, consider the early stages of an information technology consulting engagement, when a new project has yet to be started, let alone completed. Its only physical manifestation may be some boxes and arrows on the back of an envelope or a few paragraphs in a Request for Proposals. Yet, IT professionals are frequently asked to give presentations that demonstrate their ability to bring those boxes and arrows to life—on time and under budget. Since powerpoint artifacts exhibit what Pinch and Bijker (1987) called “interpretive flexibility,” they provide viewers with the opportunity to see what they want or need to see (Sturken and Cartwright, 2001). The inclusion of visual images extends the symbolic and metaphorical possibilities (Barry, 1997; Chaplin, 1994) of the text. Almost like inkblots in a Rorschach test, even when they contain little factual or objective content, visual images can be used to imbue a text with an aura of concreteness and legitimacy (Lynch, 1991).

The paper begins with a brief introduction to the interdisciplinary world of visual artifacts and their role as symbolic carriers of cultural codes. I then present a framework for analyzing legitimation work that connects cultural context (values and assumptions) to knowledge claims. Given the importance of visual artifacts as cultural carriers, I argue that IT researchers should pay close attention to visual artifacts as indicators of IT culture.

INTERDISCIPLINARY VISUAL THEORIES

As Elkins (2003) stated, the field of visual studies is diverse and impossible to define. In part, the challenge arises due to the multiple roles that visual images play in different scholarly traditions. Table 1 provides an overview of the literature, with each cell in the table representing a major body of literature. Because of the interdisciplinary nature of this domain, many

scholarly works do not fit neatly into a particular cell. For simplicity, I have combined related literatures, such as anthropology and sociology, into a single column. In spite of the enormous depth and breadth of scholarship signified by Table 1, visual studies is in some respects still a nascent field. W.J.T. Mitchell noted (1994, p. 13): “we still do not know what pictures are, what their relation to language is, how they operate on observers and on the world, how their history is to be understood, and what is to be done with them, or about them.”

	Fine Arts, Art History	Cultural/Media Studies	Social Science	Cognitive Science
Typical Artifacts	“Traditional” media (e.g., painting, photography, sculpture)	“New” media, (e.g., TV, film, WWW, videogames, etc.)	Video, photography, and other images gathered or generated as data	Information displays, graphs, charts, etc.
Examples of theoretical issues	How do artistic artifacts reflect culture? What do they mean and how do they convey their meaning?	How does popular media affect culture (e.g., does TV violence promote real violence)? How is internet identity constructed?	How do particular occupational communities use visual artifacts?	How do humans process images? What factors influence efficiency and effectiveness of processing?
Methodological approach	Analysis of symbolism, semiotics, etc.	Content analysis, visual grammar and other analytical tools	Collection and analysis of ethnographic data using visual media	Controlled experiments
Examples	Arnheim, 1954; Ruskin 1873; Stafford, 1999	Lister and Wells, 2001; Manovich, 2001; Mitchell, 2005	Harper, 2005; Holliday, 2000; Pink, 2007	Hungerford, Hevner and Collins, 2004; Vessey 1991

Table 1: Visual artifacts play a central role in many streams of scholarship

These traditions have diverse perspectives on how images are used as data. In some areas, such as media studies, images are treated as primary data—produced by others to be sampled and compared (Altheide, 1996). In other arenas, such as visual ethnography (Holliday, 2000), videos are produced by researchers (as well as those being researched) as part of data collection. Naturally, there is considerable diversity in research focus. For example, visual data are used to investigate the impact of particular media, such as print media (Orcutt and Turner, 1993), television (Gottschalk, 2000) or the internet (Hine, 2000; 2001). In these studies, the media itself is often the focus of analysis. Yet across this diverse interdisciplinary literature, there is a well-established tradition of using interpretive methods to analyze the usage and significance of images (Banks, 2001; Grady, 1996; Penn, 2000).

In this paper, I am focusing on the use of visual artifacts in organizations. For this reason, I build on the work of Henderson (1995), Bucciarelli (1994), Goodwin (1994; 1995) and others who have researched occupational groups where visual artifacts are an integral part of the work. For example, Henderson (1995, 1999) studies the visual culture of engineers and their use of visual artifacts such as blueprints. Newman (1998) focuses on the use of technical diagrams by software engineers (e.g., networks, middleware). Hindmarsh and Heath (2000) examine visual artifacts and interactional patterns within a British Telecom office. In the information systems literature, Sarkinen and Karsten (2005) apply ethnographic techniques to understand how participants in system design discussions interpret and discuss visual representations such as flow diagrams. While they apply diverse methods, these authors seek to understand the practices and systems of meaning within a cultural group. In these examples, of course, the cultures in question are occupational cultures in the workplace.

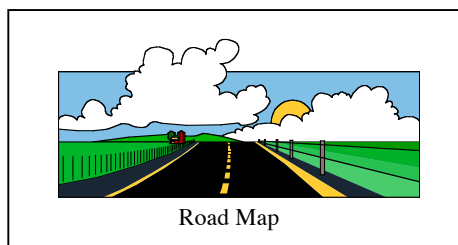


Figure 1: The “Road Map”

Consider a simple example. Figure 1 contains an example of a slide from a consulting engagement. It is sufficient to know that it was presented at the beginning of a consulting engagement, before any work was performed. It contains a single cartoon-like image and a bare minimum of text. It is notable for its lack of information content, and it would certainly be possible to regard the image as gratuitous. Yet the image is filled with meaning, since it signifies the beginning of a long journey for which the consulting firm is hoping to be hired as the guide.

VISUALS EMBED CULTURAL CODES

The meaning of a visual element is not entirely open ended. Like any symbol or sign (Penn, 2000; Rose, 2001), visual elements can be used to embed meaning. Indeed, visual stimuli are highly effective at embedding a wide range of cultural codes. In her discussion of advertising media, for example, Barry (1997, p. 297) argued that visuals can simplify the product message “to its most quickly and easily understood form.” Barry (1997) noted that visuals can be particularly effective when they evoke a familiar metaphor, or encode narrative or symbolic meanings that go beyond the literal level.

The effectiveness of symbols in carrying meaning depends on the sophistication of the audience. Henderson (1995, p. 212) argued that different viewers read embedded codes in a visual representation on different levels. Using a 15th century painting of the Virgin Mary as an example, Henderson noted that viewers unfamiliar with the Western Christian tradition would only see a picture of a long haired woman with flowers. Intermediate viewers would recognize the woman as the Virgin Mary, and knowledgeable viewers might recognize that white lilies signify her chastity.

A similar analysis can be applied to any kind of visual material. Bucciarelli (1994) studied engineers who used graphical visuals for communication and creating shared constructions/vocabulary. Engineering representations such as flow diagrams and other kind of charts are replete with embedded codes that communicate important details to informed viewers. Suchman (1988; 1999) has also documented whiteboard practices of systems designers who rely heavily on graphical representations for communication. The efficacy of these graphical elements as communicative devices depends, of course, on the sophistication of the audience.

VISUALS AND INTERPRETIVE FLEXIBILITY

Henderson (1991, p. 201) describes how engineers use their drawings as “an arena for the introduction, manipulation, and resolution of design dilemmas.” In her view, drawings are important “because they serve both as individual thinking tools and as interactive communication tools.” (1991, p. 203). The importance of images as a locus for social interaction has been recognized in a wide variety of settings. Images function not only as “boundary objects”—allowing members of different groups to reach a common understanding (Star and Griesemer, 1989)—but also as “conscription devices” that help enlist the support or cooperation of others (Henderson, 1991). Karsten et al (2001) also distinguish between inscription objects, which are “immutable,” and conscription objects, which are “mutable.” Because conscription objects are more open to interpretation, Karsten et al (2001) argue that they encourage participation, allowing different audiences with diverse sets of assumptions to find common meanings.

Visual artifacts are particularly well suited to the IT context due to their interpretive flexibility. IT knowledge is “slippery” in that it is difficult to pin down and specify fully (Alvesson, 2001). This is especially true in situations concerning new or not-yet-implemented systems, or at the outset of any large project involving multiple parties. The diagrams and descriptions in the presentation refer to a hypothetical system that does not yet exist. The ephemeral quality of the topic makes it a perfect fit for the flexibility of the multimodal presentation artifact.

The need for interpretive flexibility is even greater when there are multiple audiences for the presentation (management, users, vendors, etc). Interpretive flexibility allows each audience, as well as the different individuals in the audience, to construct a distinct message from a common source. This helps explain why visuals have become so pervasive in management and consulting. As Sturdy (1997, p. 400) notes, “It is important for consultants to confirm clients' existing ideas in the presentation of the new ones on offer.” Use of the visual in consulting presentations allows the consultants to retain interpretive flexibility while offering the impression of legitimacy and concreteness. Mundane and informal, the visual presentation gives the viewers something to “see,” and therefore come to believe in its existence. This is a crucial practice for the conduct of consulting work. Further, by listening to how different groups of viewers “fill in” this visual, the consultant can “read” what the clients fill in and use this information to tailor future presentations or work for the particular audience.

KNOWLEDGE AND LEGITIMATION IN IT CULTURE

IT is a highly fragmented world, with many diverse and rapidly changing sub-domains. As a result, people working in IT face a constant challenge: How to generate legitimacy for their knowledge? Theories of organizational politics and power (e.g., Pfeffer, 1981) would seem to provide an easy answer: those who control resources dominate the discourse (see also Deetz & Mumby, 1990; Mumby, 2000).

While power plays an important role in some circumstances, recent empirical studies suggest that there is another alternative: legitimation can be accomplished by crafting claims that skirt open conflict, rather than meeting them head on. Close empirical observations of naturally occurring talk suggest the deliberate use of unclear, inconsistent, and flexible messages are often part of organizational dialogue. In his work, Jackall (1988) described the widespread use of euphemistic and

equivocal language by managers to achieve particular goals. In particular, Jackall's analysis suggests that legitimation work can involve flexibility and ambiguity, not domination and control.

Like Jackall, Huisman (2001) observed that considerable "interpretive leeway" exists when people are co-present. Huisman argued that maintaining ambiguity and sustaining multiple meanings is crucial to legitimacy in many circumstances. Likewise, Menz (1999: 112) has noted, "vagueness serves the purpose of creating and upholding ambiguity and thereby preserves various options in a decision-making process." Donnellon, Grey & Bougon (1986) found that organized action could occur despite the lack of shared meanings or interpretations within a group. Domination and control provide one mechanism for legitimation, but these findings suggest that flexibility provides a different mechanism.

Legitimation has been studied at many different levels of analysis in the social science literature; at every level of analysis, legitimacy is understood to mean acceptance of something as "right" (Zelditch, 2001). At the level of interaction, however, the process of legitimation has not received as much attention. Following Zelditch (2001), the legitimacy of a claim or action can be defined as the extent to which the claim or action is accepted as "right." IT workers face a constant challenge in maintaining the legitimacy of their technical expertise.

Legitimation can be tied to visual artifacts through the concepts of interaction frames and interpretive layers. Interaction frames occur on a brief (micro) time span, while interpretive layers occur on the larger (macro) time span of institutional and cultural symbol systems. Visual artifacts embed cultural codes, as discussed above. In any given context, such as an IT design meeting, those visual codes will be understood and interpreted in terms of the interaction frames and interpretive layers that are active at the time. The follow sections explain these two concepts.

Interaction Frames

Interaction frames provide a lens through which participants view and interpret each other's actions. Building on the work of Goffman (1974) and others, Tannen (1984:23) defined a "frame" as "a superordinate message about how the communication is intended." Frames help us answer the question, "what is going on here?" (Goffman, 1974). For example, when we see two people in an intense interaction, we might wonder: are they fighting or playing? Are they competing or cooperating? Are they joking or serious? Interaction frames are an essential and distinctive aspect of establishing meaning in interactions that is unique to the phenomenon of face-to-face interaction. The analysis of textual communications, such as journalism or corporate communications, does not require any consideration of interaction frames because there is no interaction.

The power of interaction frames is easy to overlook, but dangerous to ignore. As Garfinkel (1967) demonstrated, when the normative orders underlying an interaction are breached, one might see "all hell break loose" (Heller, 2001: 252). For example, Tannen and Wallat (1987: 207) described a telephone conversation during which a friend suddenly yelled, "YOU STOP THAT!" Tannen, at the other end of the telephone conversation, "knew from the way he uttered this command that it was addressed to a dog and not her," and recognized the frame "disciplining a pet," rather than "chatting with a friend." Thus, Tannen realized that her friend was not unaccountably screaming at her, but at her friend's pet. Certainly, when interaction frames break down, anger, hostility, bewilderment and a sense of betrayal may follow (Garfinkel, 1967).

Framing is serious business; it can account for the difference between a friendly joke and a racial slur. Of course, participants might fail to pick up on these aspects of an interaction. Such misunderstandings can be a classic source of comedy, but they are also at the core of confidence games and other forms of strategic interaction (Goffman, 1974). In most cases, the participants are all "on board" with the particular frame. An excerpt from a pediatric medical examination illustrated this point (Tannen and Wallat, 1987: 210). While examining the child's ear, the pediatrician asked, "No monkeys in there?" If taken literally, such a question would clearly mark the physician as odd or incompetent. Yet the question made perfect sense in the context of establishing rapport with a young patient, and the child responded with a "delighted giggle." But even the child noticed the rapid switch to a non-teasing instruction from the pediatrician in the next comment: "Bend your legs up a little bit...That's right." Interaction frames are so crucial to linguistic competence that even small children are aware of them.

Interpretive Layers and Symbolic Resources

To understand the significance of an interaction, we must also recognize that participants interpret the flow of action using their own systems of meaning (shown at the bottom of figure 2). Heracleous and Marshak (2004) refer to these systems of meaning as part of the interaction context. It is worth unpacking this term somewhat further, because these systems of meaning can be thought of as having "layers" (Rhodes, 1991). These interpretive layers can be referenced during interpersonal interaction (e.g., Berglund and Werr, 2000). References to "the bottom line" provide an obvious example in for-profit organizations, as do references to "true love" in conversations about relationships. Such culturally bounded

assumptions and systems of meaning are important bases for interpretation and action (c.f., Geertz, 1973; Swidler, 2001). These meaning systems persist over time as the most enduring aspect of the framework. By contrast, interaction frames are more fleeting since they are relevant for particular meetings or conversations.

These layers need not be entirely consistent; Swidler (2001: 133) has noted that "...people keep on tap multiple, often conflicting cultural capacities and worldviews." Rhodes (1991) used the metaphor of *pentimento* to express the way that these cultural "layers" coexist and overlap, like the layers of paint on an old canvas. This metaphor graphically portrays how diverse interpretive layers of symbolic resources are potentially present in an interaction, ready to be called up or referenced by the participants. In certain organizations, these interpretive layers will seem particularly solid and the participant's choice of appropriate interpretive layer (or metaphor) will seem clear or pre-ordained (Deetz, 1998). As Clegg (1987) noted, references to hierarchy and formal authority often have this taken-for-granted quality.

IMPLICATIONS

This discussion has several implications for IT research. The main implication is that visual artifacts can be one way to gain an understanding of the culture of any given IT community. Visual artifacts embed cultural codes, and IT researchers can study visual artifacts and peel back the layers of cultural codes to lay bare basic cultural assumptions. At the same time, it is important to realize that visual artifacts embody layers of meaning (like *pentimento*). In some IT research, visual artifacts like charts, graphs and diagrams are assumed to have a single, objective interpretation or information content. I am suggesting that even apparently objective representations, such as photographs, can have multiple layers of meaning that may differ depending on the audience. Furthermore, the meaning of a visual artifact may differ depending on the setting in which it is presented, because the meaning depends on the interaction frame. An image may be interpreted ironically or seriously, literally or figuratively. The meaning is not just in the image.

LIMITATIONS AND METHODOLOGICAL CONSIDERATIONS

The context-dependence of meaning suggests that fieldwork is the most appropriate method for studying visual artifacts. In many situations, the interaction frame and interpretive layers may be quite fluid and flexible. Indeed, like Jackall's (1988) symbolically dexterous managers or Menz's (1999) intentionally vague knowledge workers, IT workers might deliberately refer to several interpretive layers to keep meanings multiple or open. Note that, like any aspect of culture (Swidler, 2001), interpretive layers can be localized to the particular cultural, occupational or organizational group (Van Maanen and Barley, 1984). To understand the significance of culturally bound layers, one must adopt an "emic" (insider or native) perspective.

While they have been overlooked in IT research, visual artifacts have been the focus of many different scholarly traditions. For more detailed discussions of the strengths, weaknesses, and appropriateness of particular methods, readers may wish to consult the references mentioned in Table 1.

CONCLUSION

Images are everywhere, and they are central to many aspects of IT work, but we generally do not study them. This omission is particularly glaring given the growing capabilities of information technology to generate, reproduce and share visual images. Of all the five senses, vision has a unique and privileged position with respect to knowledge and truth ("as one can plainly see..." "I know what I saw..."). Yet with few exceptions, our research ignores the visual. Certainly the time has come for IT scholars to look more closely at the artifacts we see every day.

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