Analyzing Artifacts: Material Methods for Understanding

Identity, Status, and Knowledge in Organizational Life

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Recently, I visited my sister Stephanie in the New York suburbs, where she works as a bank teller. A few months earlier, the bank had been acquired and Stephanie got a new branch manager. Every morning when the manager first arrived, he walked behind the teller counter and neatened their work spaces. “He is driving me up a wall!” Stephanie said, “He keeps moving my envelopes and I can’t reach them!” She always keeps her drive-through envelopes on the left side of the counter, where she can grab them easily when she has to turn around to the drive-through window. Stephanie told her manager repeatedly that she is left handed so the left side works best for her. Still, he popped up behind her every morning and moved the envelopes to the right side.

Listening to Stephanie complain about her manager disturbing her work setup substantiated my conviction that focusing on artifacts is an important way to learn more about organizational dynamics. When I pursued the tale of the envelopes further, I learned how meaningful the objects in her work space were to Stephanie – she could tell me precisely what type of inbox arrangement she and each of her colleagues constructed from the odds and ends they hoarded when the bank was bought and the supplies changed.

I already knew that Stephanie was frustrated with the minimal latitude she had in her job – everything she does as a teller is checked and cross-checked. Tellers are called onto the carpet every time their drawers do not “proof” and Stephanie feels shamed by the managers when she makes an honest mistake and comes up short. However, Stephanie’s artifact tales brought her frustration and lack of autonomy into focus, materially demonstrating how little control tellers have over their work. When her branch manager moved her envelopes, he not only intruded on her work, signaling his status and wielding power over her, but he also challenged her identity as a teller, infuriating her by messing with the objects that allowed her to work efficiently and were central to her work identity.

Stories such as Stephanie's suggest that there is significant value in studying artifacts in organizations. In organization theory we don't pay as much attention to artifacts as we should – objects are central to the work of organizations and our theories of organization would therefore be greatly enriched by adopting the study of artifacts as an analytic method. In organizations, we produce artifacts and use them as tools; objects provide points of contact for people and are imbued with meaning. By looking at how objects are used in organizations researchers will be enmeshed in the work of organizations, and by getting closer to what actually goes on in organizations we will consequently draw analytic attention to work, process and the social and material construction of organizational life.

As Lynch suggests, "*things* become integral to attributions of blame; they embody norms and sanctions; they become (or become subject to) social control mechanisms; they enact social roles; they facilitate and defeat rational expectations; and they become material features of our interactional repertoires" (1996: 246, emphasis his). As material manifestations encoding social meanings, artifacts have great potential as a tool for teasing out organizational dynamics that might otherwise be hard to trace. In a classic example, Cyert and March (1963) used artifacts such as reports to describe the process of decision-making; more recently Fine (1996) has illustrated how kitchen artifacts contribute to the aesthetic work of cooks. Moreover, artifacts have played a central role in our understanding of organizational culture – because studies of culture focus on the meaning of the organization to its members, they require a thorough examination of the symbolic elements of organizations (see Gagliardi 1990 for a broad-ranging survey of symbolic organizational artifacts).

However, in the past decade or so, researchers have begun to reach beyond symbolic interpretations, incorporating artifacts into their analyses of organizational processes at the individual, intergroup, and interorganizational levels. Specifically, researchers have used artifacts to help us understand how people maintain and legitimize identities, how groups enact membership and status, and how organizations transform and manage knowledge. These processes are critical to our theories of organizations, and using artifacts allows researchers to delve into the social and material aspects of these processes simultaneously.

In this chapter, I argue that analyzing artifacts and their use by organization members can expand our theorizing because artifacts are material representations that draw attention to the social construction of organizations, the influence of work processes, and the multiple interpretations held by organization members. I draw on recent developments in organizational theory at three levels of analysis – individual identity processes within organizations, intergroup status and conflict, and cross-organizational knowledge management – to offer illustrations of how we might use artifacts as a means for illuminating the social and material construction of organizational life. In some of these studies, artifacts appear on the periphery of the findings, but I suggest several ways that featuring the role of artifacts in work processes will open up these areas of organization theory even further. Finally, I explore some of the methodological implications for research featuring artifacts in organizations.

Artifacts signify and influence identity in organizations

Artifacts play an important role in the construction of identity. Mead (1934) theorized that one's identity as a body was confirmed through interactions with the objects one encounters, grasps, and uses. Further, Csikszentmihalyi and Rochberg-Halton (1981: 53) suggested that "objects affect what a person can do, either by expanding or restricting the scope of that person's actions and thoughts. And because what a person does is largely what he or she is, objects have a determining effect on the development of the self." Artifacts construct identity through individual contact, and through a sense of what Knorr Cetina (1997: 20) called solidarity: "a sense of bondedness or unity…a moral sense and states of excitement reaffirming the bondedness." These conceptions stress the identity that emerges as one uses and gains knowledge of particular objects. This identity is continually reaffirmed (to both others and ourselves) because objects are material, ever-present reminders that can be employed repeatedly to remind us who we are (McCarthy 1984).

Because the workplace is a locale in which people's many identities intersect, the study of organizational identity has burgeoned in the past decade. Moreover, the analysis of artifacts has engendered significant progress in our theoretical conception of how identity is represented in organizations. For instance, recent research in organizational identity suggests that people draw on objects such as clothing or personal possessions to symbolize and legitimize both professional and personal identities in the workplace (Pratt and Rafaeli 1997; Rafaeli and Pratt 1993; Rafaeli, Dutton, Harquail, and Mackie-Lewis 1997).

One set of identity studies that stands out for its emphasis on artifacts is Kim Elsbach's research on workplace objects as markers of identity (Elsbach 2003, 2004, 2006). Elsbach shows how physical artifacts, such as office décor, layout, or dress, represent group and personal identity in organizations. She argues that identity objects are most often used in the workplace to signify distinctiveness, satisfying our need to differentiate ourselves and the groups to which we belong. They also symbolize status, indicating prestige, achievement, or social rank (Elsbach 2003, 2004).

Beyond the symbolic, Elsbach's research addresses the processes by which identities are both categorized and legitimized. For instance, she finds that people use different processes to categorize the workplace identities of others – those that categorize others through a detailed bottom-up process encompassing many cues have a complex sense of others' identities, while those who categorize via a top-down theoretical process based on visually salient objects develop more stereotyped assessments of others' identities (Elsbach 2004). Elsbach therefore extends theory about identity processes by identifying the role of physical objects in people's perceptions of the identities of others. Furthermore, she demonstrates that artifacts are so important for signaling workplace identity that people feel threatened when their ability to display such material markers is lost. The employees in her study of a office that shifted to a non-territorial "hoteling" arrangement went to great lengths to reaffirm and legitimize their identities, "squatting" in their assigned cubicles, moving furniture and posting work plans and drawings on the walls of common areas, and bringing in portable personal items such as magnetized pictures of their children to mark their space in distinctive ways (Elsbach 2003).

Studies of the role of artifacts in organizational identity have not only contributed to our understanding of how the display of objects such as décor or clothing symbolize identity, but Elsbach's work (2004, 2005) also helps explain the processes of enacting identity in organizations. By using artifacts, this work draws on material manifestations of identity to enable a closer examination of the process by which identity is projected and legitimated in the workplace.

Theories of organizational identity could be developed even further by considering the ways that people use work-related artifacts to construct identity in organizations, as objects are not merely symbolic but also have material effects on identity (Mead 1934; Knorr Cetina 1997). Because artifacts influence action and constrain and enable workplace behavior, our understanding of organizational identity would be enhanced by pursuing studies of how workplace objects act on individuals' identities. For instance, in addition to exploring the objects that people display, researchers should also explore the objects they use in the course of their work. Elsbach's work on non-territorial workplace objects is suggestive of this, as some of her informants used work objects such as drawings as markers of group identity.

Workplace objects are not merely markers of identity, but they can be integral to the development of identity itself: when a doctor dons a white coat and stethoscope, she not only represents her identity to others, but her identity as a doctor is formed in relation to those objects. Thus, identity research might similarly consider not only how a drawing marks someone's identity, but how the creation of that drawing contributes to the informants' conceptions of themselves as engineers, for example. Or, to return to the example of my sister, how does the way that Stephanie uses her cash drawer influence her identity as a teller? Her interactions with her managers around the process of "proofing" the drawer seem to play a large part in the construction of her workplace identity, as this process links making mistakes, learning the teller's craft, and developing pride in her work. Considering how the use of workplace artifacts constructs identity would orient identity research toward elements of work, process, and social construction that have not yet been explored.

Artifacts enact group membership and status in organizations

The display and use of objects is a key mechanism for signaling and representation of social membership. Anthropologists have examined how the flow of objects influences and constructs social relations; for instance, gift giving (Mauss 1976) and commodity exchange practices signal kinship and social integration (Douglas and Isherwood 1979). Studies of taste and consumption also point to the function of artifacts, and people's stance toward them, for signaling membership in a particular class (Veblen 1899; Bourdieu 1984), expressing cultural categories and ideals, and maintaining lifestyles (McCracken 1988; Appadurai 1986). Thus, in organizations, artifacts can be used to symbolize an individual's membership in a particular social milieu, such as an organizational subculture or occupational community. Further, such objects are not only indicators of social status (Simmel 1957; Riggins 1994) but also can be used to reproduce and protect status systems, maintaining a differentiated social order (Appadurai 1986; Csikszentmihalyi and Rochberg-Halton 1981).

Because artifacts are socially constructed, an artifact has as many meanings as there are different social worlds (Mulkay 1979) and social groups will differ in their understanding and use of such objects (Pinch and Bijker 1984). Organization theorists taking a grounded approach to the social construction of objects have shown, for example, how people's perceptions of a technology shape and are shaped by interactions with that technology within their organizational context (Barley 1986, 1988; Orlikowski 1992). Different subgroups in organizations may therefore develop their own "technological frames" (Orlikowski 1993) around particular objects, using such objects to enact group membership and status.

Because objects are not only symbolic, but are constitutive of status in organizations, studying the intergroup dynamics around them yields interesting and fruitful data about intergroup relations. For instance, my own research on the social construction of objects within groups in organizations explored the negotiation of occupational jurisdiction through the use of artifacts (Bechky 2003a, b). In this work I found that the interactions of engineers, technicians, and assemblers around the drawings and machines at a manufacturing plant could be characterized as three analytically distinct but interrelated dynamics of jurisdictional conflict: knowledge, authority, and legitimacy (Bechky 2003b). As representations of knowledge, objects such as drawings and machines were both useful for solving problems and for reflecting the status of each occupation's knowledge. The occupational groups also enacted claims of authority around drawings and machines by asserting their physical control over these objects and the processes used to create them. Finally, the objects represented occupational legitimacy: because they transmitted reputations, objects were used by people to claim standing as valid practitioners of a particular occupation.

Studying how occupational jurisdiction was contested through the use of objects enabled me to place the focus of my analysis squarely on the work process. The research on occupational jurisdiction (Abbott 1988) already provided a thorough analysis of how professions compete at the field level through activities such as lobbying, influencing public opinion, and educating members. But this literature was silent with respect to how this competition happens at the level where the work is carried out. Analyzing artifacts gave me the leverage I needed to demonstrate the significance of the patterns of occupational negotiation that occurred at the workplace level.

A related arena for intergroup relationships in organization theory that could benefit from similar object-oriented analysis is the study of distributed work. Research on these teams investigates how to ameliorate the conflict and problems in intergroup communication that result from geographic and temporal dispersion. Several recent studies in this area hint that objects influence intergroup dynamics in virtual team settings. For instance, Hinds and Mortensen (2005) found that shared context is an important factor in moderating conflict in distributed teams. One factor comprising shared context in these teams was the use of the same work tools and processes. Further, Metiu's (2006) study of a distributed software team in the U.S. and India suggested that elements of their intergroup conflict were reflected in the way group members used (or ignored) work objects. For example, some of the developers in the dominant U.S. half of the team refused to read the software code and documentation created by the Indian team members, asserting that it was poor quality code without even examining it. These studies point to the role of work objects in reflecting and constructing intergroup conflict and status in virtual organizations.

Given the influence of such artifacts in studies where they appear in the background, imagine what research methods that bring artifacts to the foreground might tell us about the dynamics of distributed work. Asking specific questions about software documentation, or tracking the changes that different groups make in particular work tools would focus closer attention on the processes by which membership in subgroups influences the dynamics of virtual teams. For example, Hinds and Mortensen (2005) asked their informants questions about elements of shared context that included how frequently they encountered incompatibility between team members' tools and the differences in information held by team members. An object-based analysis of shared context could more concretely map these differences by either observing the teams' use of tools or asking more specific questions about how differences in the use of objects influenced the team dynamics.

Moreover, since we know that social groups use and understand objects differently, focusing on aspects of use and meaning with respect to objects would probably unearth new ideas about the basis of the conflicts across these distributed teams. The literature on distributed team dynamics encourages face-to-face interaction among team members, particularly in situations of ambiguity or uncertainty (Nohria and Eccles 1992; Daft and Lengel 1984; Trevino, Lengel, and Daft 1987), because such interaction provides social cues such as facial reaction and body language to guide understanding and engender trust. However, one point not developed in this literature is that such interaction also allows group members to develop a shared point of reference with respect to work objects. For instance, in the teams Hinds and Mortensen (2005) studied, it is quite possible that the members of these teams that do not interact face-to-face are using the same work tools in different ways, which detracts from their compatibility. By bringing objects into the analysis, the ways in which the work of these teams figures into intergroup conflict might be more clearly articulated and could therefore enrich our understanding of the process of intergroup conflict in distributed teams.

Artifacts construct and embody organizational knowledge

Objects play a significant role in the knowledge processes of organizations. In science studies, for example, knowledge objects are treated as social facts, and the relationships between such objects and the people who encounter them are important for revealing the social organization of science work (Lynch and Woolgar 1988). Because social dynamics can inhere in material objects, their function is not only technical, but social (Latour 1988; Winner 1980; Foucault 1979; Knorr Cetina 1999). Also, because artifacts embed the knowledge of their creators, they can operate as boundary objects between groups, conveying information and mobilizing action (Star and Griesemer 1989; Henderson 1999).

Recent research in knowledge management has adopted some of these notions to explore the role of objects in knowledge-related work in organizations. This work draws on ideas about boundary objects and inscriptions (Star and Griesemer 1989; Latour 1986), as well as the communities of practice literature (Lave and Wenger 1991; Brown and Duguid 1991), to argue that artifacts are an important mechanism for boundary crossing between groups in organizations. Because such objects can be understood in more than one community, they can help solve problems (particularly technical problems) across such groups.

In this area, Paul Carlile's work (2002, 2004; Carlile and Rebentisch 2003) is notable both for the integration of objects into his analysis and his theoretical stance toward the groups that use such objects. He focuses on the dependencies between groups as they go about solving everyday dilemmas in product development. Carlile provides a framework for managing knowledge at group boundaries in organizations, arguing that different types of capabilities are needed to manage at different types of boundaries. For instance, syntactic boundaries are those in which the differences and dependencies between groups are known. These can be managed through the transfer of knowledge via a common lexicon, and thus the objects used at this boundary are stable and their meaning is shared by all. In contrast, as problems increase in novelty, groups have different interests as well as different knowledge and understanding of objects, and therefore these pragmatic boundaries require changing the knowledge that is at stake between groups through practical effort (Carlile 2004).

By taking an artifact-related approach, Carlile has extended the knowledge and technology management literature beyond the information processing metaphor. With this metaphor, knowledge management had been represented as a simplified process of "knowledge transfer" across groups: for instance, turning tacit knowledge into explicit knowledge through codification (Nonaka 1994). Carlile's studies of managing knowledge at organizational boundaries, in contrast, incorporate an understanding of the practical action, interests, and dependencies inherent in processes of knowledge exchange. Much of the boundary spanning work involved in knowledge management activities entails interactions around work objects, and the groups involved have different levels of vested interests in these objects. It is through studying artifacts that such practical actions and interests are made evident.

Jason Owen-Smith's research also illustrates the analytical impact of exploring the use of objects in knowledge work. His study of a university technology licensing office (Owen-Smith 2005) demonstrates how associates in the office orient their work and problem solving activities around dockets, which are artifacts that bundle the disclosures, intellectual property information, markets, articles about the inventors, and opinions of the associates about particular deals. In breaking down dockets into their socio-technical components, Owen-Smith (2005) shows that in this office, dockets enable commensuration of deals, providing a common metric that associates draw on for their negotiations around deals. Further, he demonstrates how this local negotiation can result in organizational learning through the institutionalization of stable rules, procedures and language that emerges. By examining the material and social features of dockets, Owen-Smith is able to link local negotiation of knowledge with organizational and institutional change.

These types of analysis could also help us further understand the relationship between the material and the social in knowledge transfer and learning that crosses organizations. While Owen-Smith's (2005) study of negotiations of dockets focused on local institutionalization of rules, the process of commensuration and organizational learning is also likely to take place across organizations in the same field. He notes, for instance, that the associates in the technology licensing office often conducted seminars and outreach activities to offices in other universities (Owen-Smith 2005). We would expect the artifacts they use to accompany them during such activities, and to be useful in cross-organizational interactions.

In particular, knowing how knowledge artifacts move across organizations, and how they change or become stabilized at a field-level, would further our understanding of how knowledge filters across organizations through the work processes and interpretations of organization members. One branch of the knowledge management literature has concentrated on the factors that influence knowledge transfer across organizational units – in particular, motivation and trustworthiness (Szulanski, Cappetta and Jensen 2004; Osterloh and Frey 2000). Tracing the movement of artifacts would allow researchers to more directly examine such cross-organizational processes, incorporating the work and interaction around artifacts that accompanies such learning.

For instance, Szulanski, Cappetta and Jensen (2004) find that trustworthiness may impede successful implementation of knowledge transfer in situations that are ambiguous (which they define as situations in which the knowledge being transferred is not fully observable), because trust may lead to lower levels of vigilance and monitoring. However, this survey-based research presents a retrospective snapshot of the factors affecting such transfer. Incorporating an analysis that followed the artifacts involved in transferring the knowledge would provide a more complete and accurate picture of the processes by which these transfers happened. Because objects have different meanings in different social worlds (Pinch and Bijker 1988) and because they are used by people to construct knowledge (Carlile 2002), tracing these objects could turn up patterns of use or adoption that explain why groups that trust one another have implementation problems. A lack of vigilance or monitoring may not be the root cause of such problems; analyzing the artifacts used in cross-organizational knowledge diffusion would help us understand more about the source and nature of knowledge asymmetries.

Future research could investigate questions such as: Which particular elements of knowledge or aspects of knowledge objects were adopted, and why? How did the dependencies between the organizations influence their understanding and consequently, their adoption? By examining the use of artifacts during this process, researchers could raise questions about what happened when such objects were not universally understood by the other organizations or had completely different meanings. Tracing these discrepancies and being attentive to any disagreements that emerged would provide interesting new data on the knowledge transfer process. Doing so would extend the line of research on cross-organizational knowledge transfer beyond motivation and trust to an understanding of the power and negotiation dynamics inherent in transferring knowledge across groups and organizations.

Methodological approaches to artifacts in organizations

As Rafaeli and Pratt note, the recent spate of studies in organization theory that incorporate artifacts into their analyses have pushed our conceptualization of objects beyond symbolic representations of organizational culture, which hopefully will "lead students of organizations to embrace the full complexity and richness of artifacts" (2006: 2). I believe that by being creative in our approach to using artifacts analytically, we can capitalize on that complexity in order to generate new understandings about organizational processes.

The studies in the three areas I touched on above used a variety of strategies to uncover the meaning of the use of artifacts in organizations, and each suggests particular methodological issues and opportunities. For instance, in her research exploring workplace identity, Elsbach (2004) started with questionnaires, asking some informants for descriptions of their own displays of physical identity objects and others for descriptions of what they noticed about their colleagues' displays. She followed these questionnaires with interviews about times when people felt these objects mattered to managerial decisions such as promotions. For the study of the non-territorial office space, Elsbach (2003) conducted open-ended interviews of informants. She also observed her informants in their work spaces, and took digital photographs of the identity objects in people's cubicles.

Interestingly, Elsbach's use of digital photographs does not appear in the methods sections of her published studies. Photographs figure prominently in the studies of culture and artifacts (Dougherty and Kunda 1990; Riggins 1984): the authors analyze the features of the objects in the pictures and use them to enhance the reader's experience of the meaning. In contrast, Elsbach mentioned to me that she had a difficult time persuading reviewers in organization theory journals that her interpretations of the photographic evidence were valid and representative of her informants' interpretations. Because photographic analysis is not an established method in organization theory, it may elicit a higher standard for support than what is required for more traditional textual evidence.

Despite this potential obstacle, photographs present a valuable opportunity to delve into the meaning of objects without their actual presence. The use of digital photography to capture identity objects, for instance, could potentially aid the researcher's recall and analysis, particularly in settings with mobile or distributed work, where workers move such objects as they frequently change and reconstruct their workspaces. Another way pictures could further analysis is by showing them to informants and asking them for additional detail with respect to the meaning of the items. Alternately, the researcher could ask others what they would think of the particular set of objects if a colleague displayed them. This might stimulate thinking and emotion among informants in the absence of the artifacts themselves. It would also allow researchers to thoroughly compare the messages people believe they are sending with those that are actually perceived by others, and explore these differences fully.

Studies of artifacts with a significant observational component present different challenges. Both Carlile and Owen-Smith used observational methods in combination with interviews to capture the interaction around artifacts in organizations. Carlile (2002, 2004) used vignettes describing cross-functional groups interacting around objects such as models and plans. He gathered data for these vignettes through observation of cross-functional events as well as interviews of participants to clarify the details of such events. Owen-Smith (2005) observed the meetings of associates in the technology licensing office where dockets were discussed, and also followed up with participant interviews.

The challenge with observational methods, of course, is that you cannot always be sure that the event of interest (interaction using an artifact) is going to happen. I do not think it is coincidence that much of the research that examines knowledge work is set in manufacturing plants – the ready availability of work featuring artifacts makes the processes and dynamics of knowledge work more accessible to researchers. My own preference for studying occupations with a strong material component to the work reflects my belief that analyzing the use of objects helps me pinpoint the central elements of the work that contribute to occupational status dynamics.

A related concern with observational methods is that the researcher must be aware of the different interests and meanings that cohere in artifacts. For instance, my study of occupational jurisdiction also depended primarily on participant observation, including informal interviews with my informants. It took many hours of such observation and interviewing before I understood the different perspectives my informants held about the machines and drawings they created, and I never felt I completely captured all the nuances of meaning that existed for the different groups.

Also, sometimes artifacts do not present themselves neatly for analysis. I initially had hoped that I could trace the movement of an engineering drawing as it was created by engineers, altered by technicians as they built the prototypes, and finally, used by assemblers to build the machine in final assembly. It turned out to be impossible for me to follow a single drawing: there were too many handoffs. Many groups outside of those involved in production, such as document control and scheduling, seemed to have their hands on the drawings. While asking questions about how I might accomplish this, it became clear that following a single drawing would actually draw my attention away from the specific interactions that interested me (that of technical workers involved in production). It would also take a really long time, and I was only going to be a participant observer in the setting for about a year.

Instead, I complemented a traditional ethnographic approach with a targeted set of interviews. I analyzed the use of many different drawings and machines over the course of my time in the field, and I developed an understanding of the patterns of occupational jurisdiction as a result of observing interactions between groups around these different objects. Further, because I wanted more information about the way people interpreted and used artifacts in the setting, I brought one particular set of engineering drawings to interviews with a variety of informants from different occupational groups and asked them to explain how they would use such drawings in the course of their daily work either designing or building a machine. This approach helped me to achieve my goal of figuring out the different meanings and uses of drawings without requiring me to track just one set of drawings over time. What I lost in continuity, I made up for in variability through observation. And by creating some continuity through the interviews around the same set of drawings, I was able to fill the gaps in my understanding of the interpretation differences across occupational groups.

In other settings, tracing the use of a particular object might make analytic sense and also be more feasible. For instance, in a distributed software team like the one described earlier (Metiu 2006), one could examine the changes in the code over time. Because software developers are not always religious about notating these changes, the researcher might try a small intervention requiring them to do so. This would provide a detailed object for study through several approaches: observation, interviews, and network analysis. The artifact itself could be analyzed using a social network approach to trace the changes and see whose changes "stick" over time. Further, while the code is being changed, the researcher could observe how the members of the group choose to make changes and interact with one another with respect to the code. Finally, the code could also be used in interviews to elicit additional data about instances that the researcher did not observe, or to further understand the process the researcher observed.

To return to my initial story, what do these ideas suggest about how to design an object-oriented study of my sister Stephanie's bank? If the research question was occupational in nature, I would start with some ethnographic observation of what tellers do every day, explicitly noting the setup of each teller's counter space and paying careful attention to the cash drawer. It would be ideal to see the changeover to new management, as the teller's work spaces were physically altered at that point, so if I knew about the acquisition in advance I would try to schedule the observation period to overlap such change.

Additionally, since proofing the cash drawer happens as the shift wraps up, I would schedule visits to allow me to observe that process. Given what I know about Stephanie's issues with proofing, I would also interview the tellers about their experiences, leading off with questions such as "What happens when your drawer doesn't proof?" or "What happens when the other tellers' drawers don't proof?" This hopefully would generate data related both to how the use of the drawers influences the tellers' identities and to their feelings about group membership and status in the bank. I suspect such an analysis would also provide data for understanding how tellers learn as well.

Given the way that object-oriented analyses have expanded our thinking about identity, knowledge and status dynamics in organizations in the past few years, I believe organization theory at all levels – individual, group, and organizational – would benefit from additional studies of this type. Analyzing artifacts draws researchers in more closely to organizations – artifacts establish a sense of presence in the life of organizations because much of the work that is done in organizations is rooted in the use, display and creation of things. Moreover, as organizations have become more dynamic and flexible, their boundaries have changed in "scope, composition, duration and enforcement mechanisms" (Scott 2004). With such changes, the work itself becomes an even more defining feature of organizations. It therefore makes sense to follow the work in organizations, and artifacts can help us to do this. By steeping us in the things that matter in organizations, such an approach can ground our explanations of organizational life in the work, the social dynamics, and the meaning of such artifacts for organization members.

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