

Bringing technology back in: a critique of the institutionalist perspective on museums

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Abstract

Sociologists that study organizations often analyze the museum from a cultural perspective that emphasizes the norms of the museum industry and the larger society. We review this literature and suggest that sociologists should take into account the technical demands of museums. Drawing on insights from social studies of technology, we argue that museums are better understood as organizations that must accomplish legitimate goals with specific technologies. These technologies impact museums and the broader museum field in at least three ways: they make specific types of art possible and permit individuals and organizations to participate in the art world; they allow actors to insert new practices in museums; and they can stabilize or destabilize museum practices. We illustrate our arguments with examples drawn from the world of contemporary art.

Key words: sociology, technology, organizations, new institutional theory

Introduction

Sociologists have been interested in art museums because they illustrate how institutional environments affect an organization's behaviour and internal social structure. As aesthetic gatekeepers, museums are constantly involved in collective debates over what is legitimate art. Howard Becker (1982), for example, raised this point in his seminal study, *Art Worlds*, when he pointed out that museum professionals determine what 'should' be shown in a gallery through interactions with outsiders, such as other museum directors, artists, critics, and collectors. Law, industry standards, and informal social norms also shape museum practice by providing templates for practice.

For these reasons, sociologists, like Becker, believe that museums are tightly linked with their institutional environment. That is, museum staff members pay close attention to social norms and industry practices. Therefore, the collection and display of art is determined by currents and trends in the art world. Sociologists focusing on museums and museologists have usually adopted some version of Becker's view. Sociological studies in the influential 'new institutionalism' school have tended to explain a museum's mission and internal organization in terms of how the museum relates to and accommodates the greater museum industry (e.g., DiMaggio 1987, 1991). Museologists, though they rarely cite sociological research, often pitch their arguments in similar terms. Museum practices are strongly affected by industry standards and the norms developed by art professionals (e.g., Carbonell 2004, Morris 2003).

Emphasizing art world practices draws attention from other critical aspects of museums, such as a museum's physical needs, which leads to this paper's central question: What role do technologies have in the operation of museums and the broader art world? How do technologies and social norms interact in cultural organizations such as art museums?

We are motivated by the simple observation that museums require social and physical infrastructures. On the one hand, museums survive because they are built on a social infrastructure composed of individual actors and social norms: artists, critics, financial backers,

lawyers, conservationists, professional standards, and a vision for what art is worthy of collection and preservation. On the other hand, museums also require a physical infrastructure: buildings, air conditioning, humidity regulators and other tools for installing, displaying and preserving art. These are not unrelated issues. Social and technical aspects of museums routinely intersect. For example, the design of a museum's physical building can be interpreted as a set of preferences that suggest a vast array of values like what art is deemed worthy of preservation. A building with large movable walls suggests that architects and trustees foresaw the need for installation art spaces. This example illustrates how technology (a specific floor plan) intersects with cultural values (the legitimacy of installation art), which is a prominent point made in the architectural design literature on museums (Crosbie 2003).

This paper makes the following arguments. First, sociologists and museologists have developed an analysis of museums focusing mostly on institutional environments, with little attention paid to technologies. Second, museum research should take into account how technology and social norms interact. Specifically, we argue that (a) technologies allow museums to accomplish goals set by the art world profession – they enable social practices; (b) technologies provide an opportunity for politics – technologies create opportunities for interested parties to assert their demands in museums; and (c) a technology can stabilize, or de-stabilize, a museum or museum practices.

In the remainder of this paper, we briefly describe the 'new institutional' school of organizational analysis, which has defined prior sociological research on museums. We then describe how museum studies have implicitly adopted the new institutional theoretical framework. After we make a case for a closer look at technology, we describe how technologies impact museums with examples drawn from the secondary literature on contemporary art. In the concluding section, we indicate directions for future research.

How sociologists see museums

Sociologists think that organizations have technical and institutional systems. By this logic, museums are no different – the networked patterns of collective behaviour otherwise known as a museum is thought to be built around tools and processes that result in task completion (the technical system), but museums must also honour industry-specific norms of appropriate conduct that make them appear legitimate and competent to peer organizations (the institutional system).

This analysis has led scholars in the 'new institutionalism' school to view organizations as existing on a continuum where 'technical' aspects of an organization are relative to 'institutional' aspects (Meyer and Rowan 1991). For example, some organizations pursue well-defined and physically demanding goals – such as auto-manufacturing – and behaviour in these firms is strongly shaped by their technical system rather than their institutional system (Thompson 1967). In contrast, other organizations – like universities or art museums – are thought to have little or no technical system. In these organizations, technologies are expected to have little, inconsistent or no effect on organizational behaviour and success because practices and routines are tailored to the organization's institutional system. For organizations like museums, scholars treat technologies primarily as symbolic objects that transmit and reinforce norms among peer organizations and their respective museum management and curators rather than as tools for completing museum-specific tasks like the careful conservation of paintings or historical woodwork (DiMaggio 1987, 1991).

The social practices within a shared organizational environment, like the museum industry, are called 'institutions' by organizational scholars and they play a central role in how sociologists analyze museums. The hallmark of the 'new institutional' school is the relentless focus on how life inside organizations is regulated by stable social practices that define what is considered legitimate in the broader external environment in which an organization operates (DiMaggio 1987, 1991, DiMaggio and Powell 1991b, Meyer and Rowan 1991, Scott 2000). The influence of institutions on organizational behaviour is supposedly most obvious in organizations like museums – organizations that new institutional scholars label as 'highly institutional and weakly technical' (Scott and Meyer 1991: 124). By this, scholars usually mean the following: that the organization's leadership is highly sensitive to the expectations and standards of its

industry; that the organization of work within the bureaucracy depends on broader ideologies and cultural scripts found in modern societies; that managers are likely to copy the practices of other organizations, especially high-status organizations; that professional groups are the arbiters of organizational legitimacy; that rational organizational myths and rules structure work practices; and that the ultimate performance of an organization's set of tasks does not depend much on tools like assembly lines, computers, and the like (see also DiMaggio and Powell 1991a, DiMaggio and Powell 1991b).

In this line of research, museums have become a kind of classic case for sociologists to make arguments about the potency of institutions (Alexander 1996, DiMaggio 1987, DiMaggio 1991, Zolberg 1981). Because museums primarily deal with aesthetic judgments, the role of technology in museums is thought to be minimal. What happens inside museums is determined by how insiders respond to art world trends and changing political environments. Museum practice reflects the disputes art world participants have over the proper role of museums. Technologies are designed to satisfy industry standards or are co-opted to satisfy those standards. Technologies, by themselves, have little effect on curatorial decisions.

This perspective is useful and speaks directly to an obvious feature of the art world: the ability of art world elites to determine trends throughout the entire museum field and the common structural features of museums. Since technology does not strictly determine exactly what a museum collects or how it is displayed, in the standard new institutional account, museum managers will look to their peers to understand how a museum should be managed. In the language of organizational sociology, individuals in highly institutional but weakly technical organizations like museums adhere to institutions, the standards adopted by other organizations in the same industry. Museums with comparable collections and prestige face the same set of problems and solve these problems by copying their peers.

Shared institutional pressures result in observable similarities in organizational behaviour across museums. For instance, in *Museums and Money*, Alexander states that 'understandings of the legitimate functions of an organization, such as a museum, that exists in a highly institutionalized environment are forceful in shaping organizational behavior' (Alexander 1996: 14). To clarify her point, Alexander writes, 'by "highly institutionalized" environment, I mean one that is highly structured with rational myths and cultural rules' to guide the decision-making of museum managers (Alexander 1996: 18). In this account, museums are above all shaped by institutions.

Zolberg's (1981: 103) treatment of museums foreshadows DiMaggio and Powell (1991b) when stating that 'macro-trends in society which are most germane to museum formation are professionalization of occupations, bureaucratization, elite formation, democratization of education, and market rationalization.' Linking micro-level decision-making and institutional pressures is a difficult research demand; however, 'these [previously mentioned macro-trends] are reflected at the micro-level in institutions founded and developed in their context. In this sense, American art museums have been and are arenas in which these secular trends have played a central role, as can be seen in their internal organization' (Zolberg 1981: 103). Again, trends and a shared institutional environment powerfully shape museums and produce observable similarities across them.

Even museums catering to new constituencies, who have little interest in existing status hierarchies in the art world, are not beyond the reach of the museum industry and its standards. For example, Moreno (2004) offers neo-institutional arguments to explain why a community art museum, Museo del Barrio, has increasingly come to resemble the established model of museums. The museum initially reflected the interests of local Puerto Rican inhabitants; however, as the local composition of the community changed – increasing immigration and the rise of Spanish Harlem – so did the museum. The content of exhibits was altered in order to cater to a boarder and more diverse public. So, in the highly institutionalized organizational environment that museums operate within, 'the survival and growth of community museums such as the Museo del Barrio has also implied to a large extent the transformation of this type of organization to a more conventional and marketable entity and its gradual assimilation to the institutional context' (Moreno 2004: 524). Moreno captures the obvious irony, 'the survival of community museums has implied their accommodation to the institutional framework and their conversion into more conventional museums' (Moreno 2004: 507).

Milligan and Brayfield (2004) shed light on the legitimacy pressures associated with making museums places of learning. They report that 'museums are expected to have educational programs in order to be viewed as legitimate by the public and by the museum community,' thus, 'by definition, museums educate. Adhering to this expectation is in the interest of a museum in that "organizations which incorporate institutionalized myths are more legitimate, successful, and likely to survive"' (Milligan and Brayfield 2004: 296).

Quantitative work on the internal organization of museums also adopts the view that museums are highly institutionalized and highly responsive to external social pressures. For example, Zucker (1987) discusses a study by DiMaggio and Powell (1984), which found that 'art museums were shown to be more likely to share similar structures – in terms of allocation of staff and budgets among administrative and artistic functions' but this phenomenon is unrelated to technology and explained by managers mimicking other managers in the cultural field of museums (Zucker 1987: 450-1). Thus, administrative behaviour and organizational form are outcomes of the highly institutionalized environment in which museums operate.

More generally, sociologists see museums as 'cultural institutions' (Powell 1991: 183) that operate in an institutional environment so strong that it overshadows an organization's technical needs (Scott and Meyer 1991: 124). For highly institutional organizations, according to the literature, the technological is actually integrated into the institutional environment. Quoting Meyer and Rowan (1991: 45), 'technologies are institutionalized and become myths binding organizations. Technical procedures of production, accounting, personnel selection, or data processing become taken-for-granted means to accomplish organizational ends.' They contend that 'quite apart from their possible efficiency, such institutionalized techniques establish an organization as appropriate, rational, and modern. Their use displays responsibility and avoids claims of negligence' (Meyer and Rowan 1991: 45). From this perspective, technologies are important because they help organizations legitimize themselves.

Technologies in museums, from this vantage point, are foremost symbolic, used primarily to signal appropriateness and further legitimize an organization and its practices. The purpose of adopting one technology over another is to comply with industry norms and standards of 'good practice,' which only serve to reinforcing pre-existing practices. A computer, for example, has no intrinsic importance to a museum – it only shows that a museum's staff is trying to document its collection to the standard set by elite museums that use computers.

When a tool becomes obsolete, the organization's practices might be pursued with new tools, which suggests to some scholars that technologies have little long term impact, apart from being an excuse to adopt a new set of practices (for which the technology is the rationale) (Selznick 1949). This conclusion has lead some organization researchers to conclude that social expectations are the foremost determinant of the internal structure of an organization like a museum, not the organization's technical needs. As Scott (1991: 165) colorfully states, although 'technology was in the saddle' during organizational analysis prior to new institutionalist insights, it appears largely irrelevant in current sociological research on organizations like museums.

How museum studies see museums as formal organizations

Institutional arguments are appealing to museum studies experts as well, resulting in a similar silence about a museum's technology. For example, *Museum Studies* (Carbonell 2004), a recent anthology in the museum studies field, dedicates approximately one paragraph to the technical demands of museums out of more than six hundred pages. The rest of the book explains how museums embody art world trends, political culture, and class and gender relations. Similarly, one finds relatively few articles on the impact of technology on museum organizations in museological journals.

Specific studies show how museologists have implicitly adopted an institutionalist perspective that almost exclusively focuses on art world trends and social norms. Morris (2003), for example, shows the establishment of 'Britishness' at Tate Britain (during the late-twentieth century) by detailing how the museum honoured an *emerging* curatorial style. Serota (2000) writes on an emerging 'institution' for museums wherein curators began designing exhibits that encourage museum patrons to experience and discover displayed art rather than feel as though

they are riding on 'the conveyer belt of history' (55). Morris' complex argument centers on two pieces (Himid's *Between the Two My Heart is Balanced* (1991) and Turner's *Bridge of Signs, Ducal Palace and Custom House, Venice: Canaletti* (first exhibited 1883) set within the broader vision of British Art by Tate Britain's exhibit: 'Representing Britain 1500-2000.' The show 'set about disrupting a formal, chronological profile of the past,' a 'rehang [that] was to incorporate a broad curatorial distinction between 'themed' areas and rooms dedicated to 'major names' (Morris 2003: 171). Furthermore, Morris sets the Tate Britain case within the broader institutional context of uncertainty in the 1990s as to what Britishness exactly meant – drawing on diverse and diffuse cultural sources such as 'Britpop, Britart, New Labour, [and] New Britain' (Morris 2003: 170). Much of Morris' explanation draws on a stylistic shift in curatorial standards set within a broad British cultural concern over exactly what "Britishness" is and Morris' clever restatement of Pevsner's question, where Morris asks: 'what is this Britishness in British art?' (Morris 2003: 176).

The concern over institutions is even reflected in Unesco's (1960) guide on practical advice, *The Organization of Museum*. The document begins by suggesting that 'while the basic principles of museum work have not changed, applications and techniques cannot but be affected by contemporary needs and modern technology' (Unesco 1960: 9). The guide, however, shifts away from technological considerations and shifts toward institutional pressures concluding that 'museums are bound to respond to these [primarily institutional] interests' (Unesco 1960: 9).

Likewise, Anderson (2004: 1) states, 'throughout the last century, museum leaders have been influencing the transformation of the museum and its role in society' and suggests that museums are now a permeable organization such that external influences place an increasingly salient role in organizing and administering museums. Orosz's (1990) work reflects a similar underlying assumption about the history of American museums. As the very idea of the museum was emerging in the United States (along with stabilizing social practices associated with museum work) a small cadre of individuals formed pioneering museums. Rather than borrowing specific examples from Europe, Orosz argues, the then emerging form of the American museum was guided by the broad and diffuse 'imperatives of the American democratic culture' (Orosz 1990: ix).

Contribution's to Vergo's (1989) edited volume *The New Museology* show a strong affinity to the new institutionalism. Museums, from this perspective, are a way for a society to establish or demarcate a national identity, but rather than a museum actively achieving the identity, the museum is a reflection of broader culture and (thought) important social distinctions – a mere 'facade' according to Macdonald and Fyfe (1996), who prefer to view museums as locals where social inequalities are played-out and (potentially) reproduced.

Yaneva (2003: 116) rejects such perspectives in favor of a more 'active' notion of museums, which emphasizes 'installation practices involved in making a museum and their materiality.' We echo this concern, but from a sociological and organizational standpoint – we do not want to discredit institutional arguments completely, but wish to show technology and institutions compliment each other in the actual work of museums.

Integrating technology and institutions in museum research

The sociological literature on museums emphasizes social pressures and art world hierarchies, which raises this paper's main question. How do we integrate a concern over technology with recognition that museums are sensitive to their environment? How do we reconcile the fact that, for example, a museum can not display installation art, currently a concern within the contemporary art field, unless the museum organization has the space and tools to present this sort of art? Or, that a museum's ability to participate in various art sub-fields depends crucially on its physical capacities?

Inspired by recent work in the sociology of technology, we argue that technology and institutions intersect in the following ways: first, technologies make possible the activities which museums are identified with. That is, technologies are often the necessary precondition for the museum's core mission and its legitimacy. Second, technologies allow museum participants to assert new values and the institutions that embody them. For example, a new technology might

allow museum curators to conserve otherwise ephemeral and unknown art. Because they can preserve the art, curators can link the art's legitimacy to the ability to preserve and display art, a very common museum goal. This linkage might very well increase the legitimacy of the new art form. Third, technologies can de-legitimize a museum and its actions. A technology's failure might allow art world actors to critique the museum's goals. Thus, when a technology makes itself visible it attracts attention to the technology and the task it is supposed to complete.

The purpose in outlining these three aspects of technology is to show that the museum does not passively respond to social pressures. We are trying to expand the sociological analysis of museums so that one can recognize how the material demands of collecting and displaying art interact with the demands to be a socially acceptable art venue.

Technology as enabler of institutions

One important role that technology has in museums is that creating and displaying art requires specific tools. To display oil paintings, for example, the museum will at minimum require rooms and walls to hang the works. They will also require more sophisticated technologies such as hydrometers (humidity monitors) and atmospheric controls so that the paintings will not crack or otherwise deteriorate over time. Illuminating art also requires complex and often expensive technologies. Windows might be strategically placed so that rooms remain illuminated without letting direct sunlight harm the artwork. Other museums require softer incandescent lighting for optimal viewing. The technical aspects of lighting, in addition to norms of 'good practice,' should not be ignored and stands as one of many instances where technology matters for museums.

Perhaps the most recent sensational example of technologies facilitating the conservation and display of art is the now well rehearsed accidental destruction of Marc Quinn's *Self*, a sculpture now commonly referred to as simply the Blood Head. Owned by prominent collector Charles Saatchi, Blood Head is a reproduction of Quinn's head made with twenty frozen quarts of the artists' own blood. The technical requirements of this sculpture – in both production and preservation – are remarkable. Not only did Quinn require medical supplies to safely extract his own blood, he also required coagulants so the blood would stiffen and retain its shape. The display also requires advanced cooling technology. A refrigeration unit was customized so it could accommodate the sculpture now tightly encapsulated in a glass display case. Despite the best intents of Saatchi to preserve the ephemeral work of art, the piece was ruined. By accident, workers at the Saatchi facility unplugged the cooling unit responsible for constantly refrigerating the piece. The workers had no idea the cord supplied power to the sculpture's display. Within hours, the multi million dollar sculpture was reduced to sticky pool of blood – seeping perilously to the floor.

On a deeper level, technologies allow both the largest museum and smallest individual collector to participate in the art world because technologies permit the display and presentation of all kinds of art, which importantly signal adherence to industry preservation standards. Quite literally, tools enable social practices that define legitimate museum behaviour.

One obvious example is the museum building itself. If a group wishes to establish a museum as a participant within a specific art subfield, such as large sculpture or performance art, then the museum must be able to not only physically house such works, but also provide enough backroom space to preserve them. The recently constructed Guggenheim Museum in Bilbao, Spain, is an example where the museum building itself is a technology – a precondition for the museum organization to be able to signal that it is a legitimate and influential actor in specific art areas. The building was designed so that the staff could install enormous sculptures made by the most prominent contemporary artists. The museum has spaces devoted to unusually large artwork such as Richard Serra's enormous steel arcs and Jeff Koon's whimsical *Puppy*, a gigantic 30 ft. (9.14 m) tall dog-shaped floral sculpture that periodically blooms. Consequently, the museum's staff has specialized subunits dedicated to installing massive sculpture (Rosenblatt 2001). By allowing the museum to acquire or display works by prestigious artists, the building is both a literal and symbolic tool by which the museum's staff signals to the larger museum community that it is complying with the museum's core mission to display art by leading artists – and that they are actually doing it day-in and day-out. By focusing on how buildings themselves create the capacity for new museum practices, we emphasize how

technologies enable institutions rather than passively transmitting or enforcing established ideas about what constitutes a museum (Crosbie 2003, Van Bruggen 2001, von Naredi-Rainer 2004).

Technology as carrier of new institutions and site of organizational politics

Organizational scholars and students of technology often point out that technologies can act as 'carriers' of institutions (Scott 2000: 77-83). Tools can be designed so that users complete tasks in specific ways, and thus reinforce pre-existing social practices. For example, business software can be designed so that users must comply with standards of financial accountability (Woolgar 1991). At the same time, technologies can be used to promote new values within the organization. An entrepreneurial person might create a new technology so that it makes a new activity easier to accomplish and thus promote a new value. Similarly, a technology might reflect competing interests. An interested party might demand that the technology perform a specific function, or demand alterations allowing them to co-opt the technology for new ends. In the social studies of technology, the process by which influential actors affect how a technology's final form is called the 'design process.'

It is important to note that the 'design process' refers to more than a technology's 'assembly instructions.' The design process creates blueprints for configuring, or preventing, social interactions (Gieryn 2002). Technologies are designed to manage or to alter existing human relations. When engineers and planners envision a technology, they must also have an idea of who will use the technology and how users will interact with each other. A focus on the design process draws analytical attention to the political interests that were involved creating the technology itself and the interactions enabled by the technology. We want to be careful, however, not to overstate the deterministic role of technology in organizations and greater society, which is a tendency of technology studies identified in the organization literature (Scott 2000: 82).

Once again, museum buildings are an insightful example of how a technology or tool can be used to promote values and how the technology itself embodies the design process. The Bilbao Guggenheim Museum building was designed with new values in mind. Traditionally, museums have carried out various tasks related to the preservation of art and educating the public. However, art world leaders and local politicians have sought to redefine the role that museums have in the economy. Museums have now been conceptualized as economic assets that attract tourists, revitalize neighborhoods, and act as 'anchors' for plans of urban renewal. Ideally, a museum could help a city reinvent its image (Rosenblatt 2001: 126).

The Guggenheim Museum was designed with new and old values in mind. Of course, the museum was supposed to accomplish traditional museum tasks, such as preserving art and educating the public. But the museum was also designed with new values in mind. Reflecting the trend towards making major museums economically profitable tourist sites, museum leaders and Basque politicians insisted that the museum building itself accommodate tourists. The building was designed by internationally renowned architect Frank O. Gehry. Visually stunning, the building was designed so that it would become a tourist attraction and a landmark. The floor plan directed visitors in specific directions to maximize viewing pleasure and the flow of traffic through the museum's galleries – a point evident in floor plans and subsequent discussion of their design 'intent' (Bennet 1995, Crosbie 2003, Van Bruggen 2001, von Naredi-Rainer 2004).

As mentioned in the previous section, the museum possesses a number of structural features that allow it to stage shows of large, attention grabbing art.

The museum's physical structure and technical capacities are both the result and a crucial material component of the political decisions made during the design process. Therefore, thinking of technology as a carrier draws theoretical attention to technology as the result of a process but also a crucial component of the within process itself. Political decisions during design include the need to collect and store art; the need to participate in urban renewal plans; the need to cater to tourists; and the construction of particular viewing experiences. If successful in the long term, the Bilbao Guggenheim museum building itself will have been a key ingredient in the establishment of a new model in the art industry – the museum as urban growth machine.

Technology as stabilizer and de-stabilizer

Sociologists of technology bring to our attention a much more subtle point about the interactions between tools and people. A substantial literature points out that a technology's visibility affects people's response to a technology. If a technology operates smoothly and is otherwise unobtrusive, the technology will become a 'taken for granted' aspect of social life (Layton 1977, Latour 1987, MacKenzie 1987). Users will not question the technology or the goal it is meant to accomplish. When technologies become taken for granted, they are often integrated with other technologies, making them hidden from view because they are taken for granted. The technology becomes a 'black box' (Pinch and Bijker 1987). And a successfully black boxed technology can reinforce an institution. As long as a technology silently accomplishes its task, hidden from view, the less likely managers and patrons will question the technology or its purpose. Social practices continue to be reproduced and organizations are thus stabilized.

In contrast, some technologies attract attention to themselves, constantly reminding users about what they are doing (or failing to do). This may happen because a technology is noisy, smelly, or 'visually loud.' American airports and airport security, for example, attract a good deal of attention to themselves in the United States – and for all of these reasons, the physical structure of airports and those social practices related to national security are the focus of intense political disputes (Krueger 2001). A technology may also attract attention because it has failed. A broken tool means that the goal is no longer accomplished, which might invite critics to question the social practice associated with the technology. Critics might ask if the technology was merited, or whether the organization should be involved in this activity at all.

Museums, like any other organization, work with technologies that vary in their visibility to users and the public. Some museum technologies are nearly invisible. Few museum goers bother to ask about the cylindrical devices that occupy the corners of museum galleries. An inquiring patron would quickly learn that hydrometers (or humidity readers) are one of the crucial tools for maintaining a museum's collection. Without daily or hourly information on atmospheric conditions within the museum, the staff might accidentally subject the art work to conditions that accelerate the aging and deterioration. The point that we wish to emphasize is that humidity readers and other tools work invisibly within the museum organization. The goals that the humidity reader facilitates – the preservation and display of art – are rarely, if ever, questioned.

In contrast, technologies may attract attention and become problems for their users. Consider the case of the Museum of Fine Arts in Boston, where a technical failure prevented the establishment of a new kind of museum practice. In 2002, the Museum of Fine Arts in Boston negotiated a controversial contract with the PaceWildenstein Gallery that allowed PaceWildenstein to rent twenty-one Claude Monet paintings. The gallery displayed the paintings in a commercial exhibit space that it owned in the Bellagio Hotel in Las Vegas, Nevada. In April 2004, the hotel's air conditioning system failed to work for nine consecutive days (Bernstein 2005). During this time, there was little cloud cover and temperatures were routinely in the mid-80s inside the Bellagio Hotel. Hydrometers, which measure ambient humidity, reported levels that exceed the recommended conditions under which paintings should be stored and displayed. It is thought that heat and humidity may have accelerated the natural deterioration of the paintings (Edgars 2004).

Unsurprisingly, the air conditioning failure at the Bellagio Hotel provided an opportunity for renewed criticism of the Museum of Fine Arts in Boston. While the deal had always been seen as a flaunting of museum industry standards, the air conditioning failure provided an opportunity for critics to say that the Museum of Fine Arts had failed in one of its basic missions – to preserve its collection. Because the museum's mission is tied so closely with its technology, an unpredictable technical failure offers an opportunity for art world participants to alter the discourse around art rentals and de-legitimize the practice. At the time of this writing, museum directors, trustees, and other interested parties are openly debating the merits of this practice, using the damage of the Monet paintings as a cautionary tale (Bernstein 2005).

The contrast between humidity sensors silently doing their job and the complete breakdown of the Bellagio Hotel's air conditioning system show how technologies can stabilize or undermine a museum and its social practices. The effortless and silent work of most humidity controls allows museum workers to carry out work that makes their organization legitimate,

while the failure of the Bellagio air conditioning system damaged the reputation of Boston's Museum of Fine Arts. Without the air conditioning failure, it is entirely possible that the new practice of 'painting rentals' made by not for profit museums would have quickly become accepted as controversy faded and public attention shifted to other issues. The failure called undue attention to and encouraged critics to question the legitimacy of this practice. These two technologies show the important ways that technologies help museums, and other organizations, accommodate themselves to their environment and try to establish new codes of conduct.

Conclusion: bringing technology back to the study of museums

This essay examined how technology and institutions interact in organizations like museums. We began the discussion by showing how museums have come to be understood by organizational sociologists, as entities that slavishly follow the trends in their external organizational environment. We then argued that the emphasis on an organization's environment and industry standards is incomplete because museums employ sophisticated technologies that have numerous effects on museums. It is not the case, as some scholars have suggested, that institutions simply precede technologies. A technology's impact is not limited to how it helps an organization's workers carry out socially mandated tasks. In contrast, technologies can destabilize organizations and they can be used to change an organization's environment.

The approach to technology, institutions, and cultural organizations implied by our argument abolishes the artificial distinction between technical demands and cultural imperatives, a critiqued shared by a number of sociologists (e.g., Zajac and Westphal 1998, 2004, Djelic and Ainamo 2005), scholars in science and technology studies (Latour 1987, Callon 1986) and museum studies scholars (Morris 2003, Yaneva 2003). The institutional encourages scholars to view museums as organizations with minimal or uninteresting technical components. But we argue that technology is not subservient to culture, but can actually undermine or reinforce certain art practices. By arguing that technologies have complex and subtle effects on cultural organizations, we merge a concern with the museum's daily practices and the demands of the larger art world.

In the remainder of this essay, we offer a few concluding thoughts about museum studies and about organizational theory more generally. First, as mentioned in an earlier section, scholars have been too quick to use the museum as an example of an organization where technology is relatively unimportant. To the contrary, museums have become complex organizations whose mission is to handle and store large, complex and possibly fragile objects. The technologies used in the service of this goal might have important unintended consequences for the museums themselves and the technologies may be use to help establish new organizational models.

Second, by considering how technologies carry new values into individual organizations and entire fields, scholars can cultivate a more refined understanding of how change comes to cultural organizations. Instead of viewing change as happening through discourse between art world elites, change may occur when new technologies unintentionally change practices within the museum industry, or when prominent actors force engineers and architects to design a technology so that it facilitates the completion of new goals. This insight suggests that the kinds of events that trigger change in cultural organizations go beyond public disputes or ideological trends among artists and their patrons. Instead, technologies enable some ideas while suppressing others, and permit some art world actors to have more leverage and influence than others. Technologies do not just reproduce practices, they are agents of change.

Third, when studying museums and other cultural organizations, researchers should test hypotheses that emphasize the effects of particular technologies rather than assuming their impotence. For example, one might hypothesize that early or catastrophic visibility, on average, decreases the likelihood that a technology and the task it facilitates will become routine within a museum or the museum industry. This hypothesis links a technology's seamless integration into an organization to its ability to legitimize and reinforce a social practice. Another hypothesis links the design process to the behaviour of the museum industry: controlling for other factors, the prestige of the persons involved in the design of a museum technology will have a positive effect on the adoption of technology and the probability that associated practices will become

an industry standard. Hypotheses like these two can compliment studies of museums that focus on trends in art world and disputes over what constitutes legitimate art. Empirical tests of these hypotheses can then help museum scholars and organizational researchers to develop a more refined understanding of exactly when and how technology will impact the practices of museums and other cultural organizations.

Received 22nd April 2006
Finally Accepted 10th August 2006

Acknowledgements

The authors gratefully acknowledge helpful comments made by Elizabeth Dietz, Thomas F. Gieryn, and Tyler Green.

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