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## Books to think with<sup>1</sup>

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When Keith Hampton invited me to write a review of influential books in the study of new media, and asked me to submit a list of the three to five titles I intended to review, I followed two criteria to develop the list: to include books that I often find myself writing about, and that address a mix of topics, historical periods, and kinds of new media. The books I finally put in this list are: Douglas' (1987) account of the technological, organizational, and journalistic dynamics that shaped American radio in the early 20th century; Suchman's (1987) examination of the problem of mutual intelligibility in human–computer interaction; Marvin's (1988) portrait of transformations in the self, family, class, and community in relation to the advent of the telephone and electricity during the late 19th century; Edwards' (1996) analysis of the political and subjective dimensions of computing during the Cold War; and Bowker and Star's (1999) study of the epistemological, organizational, and moral aspects of the information infrastructures that subtend media artifacts. In the process of rereading these books in order to write this review, I realized that there was a third and most important reason why they had been so influential to me: taken together, they provide the foundational building blocks of a heuristically powerful framework to undertake social and historical studies of new media. So, instead of writing a typical review, in what follows I take advantage of Keith's invitation to pay tribute to these books by drawing from them to articulate answers to three basic questions in new media research:

- What are new media?
- How might we study new media?
- Why should we study new media?

### WHAT ARE NEW MEDIA?

The books that I selected have helped to articulate an understanding of new media that comprises of more than novel technical capabilities. In one of

the earliest formulations of this view, Marvin wrote: 'Media are not fixed natural objects; they have no natural edges. They are constructed complexes of habits, beliefs, and procedures embedded in elaborate cultural codes of communication' (1988: 8). During the second half of the 1980s and, especially, the 1990s, this understanding evolved as part of a broader trend in sociological and historical scholarship that placed a premium on illuminating the interpenetration between the material fabric of society and the cultural configuration of technology (Bijker, 1995; Hughes, 1986; Kline, 2000; Latour, 1994; Yates, 1993). Edwards elaborated this view to make sense of the computerization of politics and the politicization of computing as follows:

Of all the technologies built to fight the Cold War, digital computers have become its most ubiquitous, and perhaps its most important, legacy. Yet few have realized the degree to which computers created the technological possibility of the Cold War and shaped its political atmosphere, and virtually no one has recognized how profoundly the Cold War shaped computer technology. Its politics became embedded in the machines . . . while the machines helped make possible its politics. (1996: ix)

This understanding of new media has sensitized analysts to the interdependence between media's technological and social elements, a perspective which is missing in alternative views that invite researchers to focus on, for example, either the technical capabilities of new artifacts or the symbolic constructions about them.

## HOW MIGHT WE STUDY NEW MEDIA?

Taken together, the five books contribute to a conceptual lens that:

- historicizes new media;
- highlights the situated character of the practices that enact their construction and use;
- emphasizes the process dimension of these practices;
- pays special attention to restoring the visibility of material and social dynamics that tend to become less visible when new media become institutionalized; and
- accomplishes these goals through a methodological commitment to reaching intimate contact with, and detailed knowledge of, the phenomena under study.

An example of historicizing new media is Douglas' (1987) account of the often overlooked 1899–1922 period in radio history, when multiple constituencies attempted to influence the technological, commercial, and ideological elements that would characterize the American radio broadcasting system for the better part of the 20th century. By casting a

historical eye on the genesis of a new medium, Douglas shed light on dynamics that would have been lost, had the analyst taken for granted radio as it existed in 1922 and onwards:

Had the technical developments, the corporate strategies, or the journalistic frameworks been different, or had that period in history not been marked by consolidation and centralization in the public and private sectors, and by the marginalization of diversity in the ideological sphere, the use of radio in America may have been quite different: after all, national networks and radio advertising were not inevitable. There were other alternatives, as demonstrated by the way radio was managed in other countries. (1987: 317)

These books also emphasize the local character of new media construction and use. One illustration of this notion can be found in Suchman's (1987) study of human-computer interaction. By contrast with the then-prevalent view that people interact with computerized artifacts by following previously specified plans, Suchman's contribution to new media scholarship has been to demonstrate the situated nature of interactivity, because 'every course of action depends in essential ways upon its material and social circumstances' (1987: 50). When the situatedness of interactivity is recognized, local factors cease to be analytical 'noise' in the study of cognitive plans, and instead become that which informs action and demands researchers' attention:

The contingency of action on a complex world of objects, artifacts, and other actors, located in space and time, is no longer treated as an extraneous problem with which the individual actor must contend, but rather is seen as the essential resource that makes knowledge possible and gives action its sense. (Suchman, 1987: 179)

Historicizing and localizing new media also entails paying close attention to the process dimension of the relationships between people and artifacts: phenomena unfold over time, and transformations occur in technologies, practices, and representations as time goes by. One example of the value of such attention to process is Douglas' (1987) analysis of the role of amateur users in challenging the initial notion that radio was a point-to-point system of information exchange, by utilizing it instead to broadcast news and entertainment. This unanticipated practice triggered major technological and commercial transformations: 'the radio trust had to reorient its manufacturing priorities, its corporate strategies, indeed, its entire way of thinking about the technology under its control' (1987: 302-3). Another illustration of the significance of process dynamics is provided by Suchman's account of the problems that arise in human-computer interaction as a result of the way in which the asymmetry in the understanding that machines and people have about this interaction<sup>2</sup> plays out over time:

Due to the constraints on the machine's access to the situation of the user's inquiry, breaches in understanding that for face-to-face interaction would be trivial in terms of detection and repair become 'fatal' for human-machine communication. In particular, misconceptions with regard to the structure of the procedure lead users to take intermediate states of the procedure as faulted outcomes. Because the intermediate state is non-problematic from the system's point of view, the system offers no remedy. The result is an interactional impasse, with the user finding evidence of trouble in her actions where none in fact exists. (Suchman, 1987: 170)

Infrastructures are complex constellations of social and technical elements where history, locality, and process meet, as Bowker and Star (1999) remind us. First, infrastructures in the guise of technical standards and classification systems are persistent embodiments of past struggles, affecting the use of established media and the construction of new ones. Second, infrastructures enable and constrain the situated action of people with media, while recursively being reproduced in these actions. Third, infrastructures are not static but evolve in people's technologies, representations, and actions. Bowker and Star furnish an illustration of the interplay among history, locality, and process in their analysis of the creation and evolution of the International Classification of Diseases (ICD):

[The] history [of infrastructures] cannot be told independently of the work practices that they constitute or the media in which they are inscribed. The work practices associated with the ICD link its history with a set of classificatory practices defining the modern state and later the modern corporation. The media associated with the ICD link its history with a set of classificatory principles associated with a particular technological base developed for the management of distributed information. (1999: 132)

Because 'information technology operates through a series of displacements, from action to representation, from the politics of conflict to the invisible politics of forms and bureaucracy' (Bowker and Star, 1999: 320), infrastructures exhibit a tendency to disappear cognitively in people's interactions with media. We rarely pay attention to the software protocols that make navigation possible on the world wide web – and that limit certain information options. Thus, Bowker and Star (1999) urge researchers to undertake what they call an 'infrastructural inversion', by which they mean analytically moving infrastructures to the foreground and making visible the function and consequences of their features.

The power of these books lies in their authors' choices to historicize news media, elicit the dynamics of their situated construction and use, understand the process dimension of history and locality, and restore visibility to often invisible technical choices, social practices, and modes of representation. To accomplish this, the authors have utilized a range of research techniques, such as detailed reading of historical archives,

ethnographic studies of current actions, and content analysis of works of popular culture. However, beneath this variety of techniques lies a shared commitment to a methodological approach that privileges the achievement of an intimate understanding of the phenomenon within the technological and social milieu in which it exists. The reason for this commitment to studying, borrowing from Hutchins (1995), 'new media in the wild', has been articulated by Vaughan's (1996) reflections about her 'historical ethnography' of technology and organization in the Challenger accident. After referring to Geertz's (1973: 28–9) image of an informant saying that the 'world rested on a platform which rested on the back of an elephant which rested in turn on the back of a turtle', and then 'turtles all the way down', Vaughan wrote:

When history, ethnography, and complex organizations combine, it is guaranteed to be, as the Indian said, 'turtles all the way down' . . . At some point, we can predict the next turtle and we know that more turtles will not change the essence of what we have learned by looking under the platform, under the elephant, and under a number of turtles. What matters in developing an anthropology of organizations is that we go beyond the obvious and grapple with the complexity, for explanation lies in the details. (1996: 463)

It is through attention to detail that the texts covered in this article reach beyond platforms, elephants, and many layers of turtles to account for the social and technological dynamics that are involved in the production and consumption of new media.

### **WHY SHOULD WE STUDY NEW MEDIA?**

These books underscore the importance of the consequences that new media have for the people engaged with their construction and use. For example, to Bowker and Star, 'classification systems are one form of technology . . . linked together in elaborate informatic systems and enjoining deep consequences for those touched by them' (1999: 290). In this sense, studying new media becomes a means by which to illuminate the character of these consequences in people's lives. In a provocative conceptual twist, Bowker and Star draw from pragmatist philosophy and sociology in order to argue that such consequences should not be seen as the endpoint of social processes, but as the starting point that orients people's actions:

Consequences . . . are the thing to look at in any argument – not ideal logical antecedents. What matters in an argument is who, under what conditions, takes it to be true . . . If social scientists do not understand people's definition of a situation, they do not understand it at all. That definition . . . is what people will shape their behavior towards. (1999: 289)

Beyond these more proximate consequences, and whether they are analytically treated as the beginning or end of people's actions, these books

also assert that analyzing new media and their consequences provide unique windows into fundamental societal dynamics: ‘since communicative practices always express social patterning, any perceived shift in communication strikes the social nerve by strengthening or weakening familiar structures of association’ (Marvin, 1988: 235). For example, Edwards undertook a close reading of the films and novels of the Cold War period in order to account for the role of popular culture in mediating and reinforcing the political and psychological dimensions of technological change:

Just as facts – about military computing, artificial intelligence, nuclear weapons, and powerful machines – give credibility to fiction, so do fictions – visions of centralized remote control, automated war, global oversight, and thinking machines – give credibility and coherence to the disparate elements that comprise these discourses. We cannot understand their significance without understanding these linkages. (1996: 26–7)

Marvin’s analysis of the early appropriation of the telephone captures tensions between the inertia of established social formations and the transformative potential of technological innovations that echo tensions characterizing American society a century later:

New media took social risks by permitting outsiders to cross boundaries of race, gender, and class without penalty. They provided new ways to silence underclasses and to challenge authority by altering customary orders of secrecy and publicity, and customary properties of address and interaction. Well-insulated communities of pre-telephone days could not remain forever untouched by these developments, nor were telephone companies able to ensure that emerging telephone communities would keep within the bounds of social decorum and work-related use. (1988: 107–8)

In light of the significance of the consequences associated with new media construction and use, and the connections of these consequences to the fabric of society, the ultimate answer to the question that motivates this final section should perhaps be its inversion: how can we *not* study new media, if we want to understand society?

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### Notes

1 This title borrows from Turkle’s (1984) notion of computers as ‘objects-to-think-with’. This book has also been influential in my thinking about new media, but is not included in this article because I have decided not to discuss books authored by former teachers and current colleagues.

- 2 Machines have limited sensory input of what users do and processing mechanisms about this information, while people have a broader spectrum of symbolic and inferential resources to make sense of the situation.

## References

- Bijker, W. (1995) *Of Bicycles, Bakelites, and Bulbs: Toward a Theory of Sociotechnical Change*. Cambridge, MA: MIT Press.
- Bowker, G. and S.L. Star (1999) *Sorting Things Out: Classification and its Consequences*. Cambridge, MA: MIT Press.
- Douglas, S. (1987) *Inventing American Broadcasting, 1899–1922*. Baltimore, MD: Johns Hopkins University Press.
- Edwards, P. (1996) *The Closed World: Computers and the Politics of Discourse in Cold War America*. Cambridge, MA: MIT Press.
- Geertz, C. (1973) *The Interpretation of Cultures*. New York: Basic Books.
- Hughes, T. (1986) 'The Seamless Web: Technology, Science, Etcetera, Etcetera', *Social Studies of Science* 16(2): 281–92.
- Hutchins, E. (1995) *Cognition in the Wild*. Cambridge, MA: MIT Press.
- Kline, R. (2000) *Consumers in the Country: Technology and Social Change in Rural America*. Baltimore, MD: Johns Hopkins University Press.
- Latour, B. (1994) 'On Technical Mediation: Philosophy, Sociology, Genealogy', *Common Knowledge* 3(2): 29–64.
- Marvin, C. (1988) *When Old Technologies Were New: Thinking About Electric Communication in the Late Nineteenth Century*. New York: Oxford University Press.
- Suchman, L. (1987) *Plans and Situated Actions: The Problem of Human–Machine Communication*. Cambridge: Cambridge University Press.
- Turkle, S. (1984) *The Second Self: Computers and the Human Spirit*. New York: Simon and Schuster.
- Vaughan, D. (1996) *The Challenger Launch Decision: Risky Technology, Culture, and Deviance at NASA*. Chicago, IL: University of Chicago Press.
- Yates, J. (1993) 'Co-evolution of Information-processing Technology and Use: Interaction Between the Life Insurance and Tabulating Industries', *Business History Review* 67(Spring): 1–53.

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