

HANDBOOK
of
NEW MEDIA

Social Shaping
and Consequences of ICTs

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PART THREE: NEW MEDIA AND ORGANIZING

Introduction

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As we enter the twenty-first century, new media are fundamentally challenging conventional wisdom about organizations and organizing. However, well before the term 'new media' first gained currency almost three decades ago, scholars have been interested in questions concerning the relationship between emerging communication technologies and contemporary forms of organizing. At the turn of the twentieth century, the inventions of telephony, telegraphy and electro-mechanical typesetting (Beniger, 1986; Yates, 1989) played a key role in supporting the dominant organizational forms that sustained the industrial revolution: bureaucracy (Weber, 1947; 1978) and its elaboration, the multidivisional form (Chandler, 1977). These organizational forms relied heavily on the new media of the time to facilitate the flow of information up the hierarchy as well as the downward flow of orders.

Today, recent inventions, spawned by the convergence of all media into the common currency of digital bits and bytes, are once again accompanied by a discourse about fundamentally new forms of organizing. In this post-industrial era (Bell, 1973) there is general consensus that new forms of organizing, which are likely to be knowledge intensive (Badaracco, 1991) and agile (Goldman et al., 1995), will supplant the vertical hierarchies of their bureaucratic predecessors. Using as an example the software industry, Raymond (1999) argues that the 'bazaar' (the chaotic marketplace exemplified by Linux and the Open Source Movement) will eclipse the

'cathedral' (exemplified by hierarchical organizations like Microsoft) as the preferred mode of organizing. In a more tempered vein some, such as Williamson (1996), have argued that these new forms of organizing will instead represent hybrids of hierarchies and markets. Others posit the emergence of network forms (Castells 1996; Jarvenpaa and Ives, 1994; Monge and Fulk, 1999; Powell, 1990), spherical forms (Miles and Snow, 1995), cellular forms (Miles et al., 1997), Moebius-strip forms (Sabel, 1990), virtual forms (Nohria and Berkley, 1994) and heterarchies (Hedlund, 1986; Stark, 1999). Still others argue that these more enduring organizational forms will be replaced by the rise of a more ephemeral e-lance (electronic freelance) economy (Malone and Laubacher, 1998).

The relationship between new media and these new forms of organizing is a focal point of considerable interest and debate among organizational scholars. It is also the central concern of each of the chapters in this part on 'New Media and Organizing'. The contributions to this part review, critique and extend the theories we need for understanding the complex interrelationships between new media and new forms of organizing and discuss the analytic tools we need for investigating them. The theoretical and empirical reviews offered by the chapters in this part examine the role of new media in organizing at different levels: individual agents, groups, organizational and interorganizational levels. In addition they bring to bear different intellectual perspectives (agent-based modelling.

social constructionist and network perspectives). This introductory essay overviews some of the central themes that are amplified in the chapters included in this part of the *Handbook*.

FROM A TECHNOLOGICAL IMPERATIVE TO AN EMERGENT PERSPECTIVE

One can argue that many of the new forms of organizing can only be conceived in light of recent technological developments. Indeed, many of these new forms rely on the potential of digital technologies to help realize coordination-intensive, fluid and flexible structures while holding the line on coordination costs (Malone and Rockart, 1991). However, some scholars (DiMaggio et al., 2001; Powell, 2001) note that many of the structures associated with these new organizational forms preceded the advent of technologies that were alleged to have caused them.

This debate illustrates an enduring and fundamental intellectual tension between, what at two extremes, constitute the 'technological imperative' and the 'organizational imperative' (Markus and Robey, 1988). Research from a technological imperative seeks to find changes in organizations resulting from changes in the technology. Scholarship from an organizational imperative seeks to explain changes in the use of technology based on organizational constraints. As the chapters in this part describe, prior research on new media and organizing has been predominantly from the technological imperative. Throughout history, the introduction of new communication technologies has prompted proponents of the 'technological imperative' (or, in its more extreme form, 'technological determinism') to investigate the effects of these technologies on the processes of organizing. The advent of the telephone, for instance, prompted many to examine whether it would result in increased centralization or decentralization in the workplace. As Pool (1981) documents extensively, the introduction of the telephone facilitated an increase in centralization (the development of offices in high-rise buildings downtown) and an increase in decentralization (the development of suburban offices). Pool termed this phenomenon the 'dual-effects' hypothesis: technologies have opposite effects at the same time and in spite of each other. The likelihood that one effect is more prominent depends less on the technology and more on other social and organizational contingencies.

More recently in the 1980s, undaunted by the lessons learned from the introduction of the telephone, the introduction of e-mail in organizations prompted similar research questions about its impact on centralization in organizations. After a decade of active research, the results mirrored the dual effects found in the case of the telephone

(Rice, 1994). The advent of the Internet and the web has unleashed a new spate of research in the same tradition and it is arriving at similar inconclusive results. For instance, contrary to conventional wisdom that the new network forms of organizing should be less centralized, Ahuja and Carley (1999) found that these forms of organizing often exhibited very high levels of centralization and hierarchy in the communication network. In fact, in a recent review, O'Mahoney and Barley (1999: 143-5) note that the empirical research is inconclusive on 'whether information technologies further centralization or decentralization', which appears to depend on management contingencies. The recurrence of studies from a technological imperative perspective with each new cycle of technological innovation suggests an abiding, albeit perhaps naive, desire to seek simple, univalent and unidirectional organizational effects of new media.

Alongside the substantial amount of research based on a technological imperative, and partly in response to it, there is a growing body of theorizing and research that embraces the 'emergent' perspective. The emergent perspective seeks to strike a balance by acknowledging the role of technologies in triggering organizational impacts but also explicitly incorporating the organizational imperatives that might moderate the influence of the technology. Theories based on an emergent perspective, such as adaptive structuration theory (DeSanctis and Poole, 1994), seek to understand the recursive and often unanticipated patterns that emerge by examining the interrelationships between the use of new media and the organizational structures and norms that influence, and are in turn influenced by, their use.

Many of the chapters in this part lament the preponderance of prior research on new media and organizing from a technological imperative perspective. They describe how the inconclusive results of this research have prompted scholars to challenge the assumptions of technological determinism. The chapters discuss different theoretical and methodological strategies that may help researchers migrate to a more emergent perspective. Some advocate the study of this emergence from a complex systems perspective.

FROM NEW MEDIA AS CONDUIT TO NEW MEDIA AS AGENT

While the emergent perspective embodies a more sophisticated understanding of how any, perhaps even older, technology is used in organizing processes, there are some unprecedented characteristics of new media that add additional layers of complexity. As discussed in several chapters in this part, new media do more than simply serve as a conduit for individuals, groups and organizations to communicate with one another. In many cases, the

Table III.1 *New media and networks of human and non-human agents*

	Human agents (individuals or aggregates)	Non-human agents (webbots, avatars, etc.)
<i>Human agents (individuals or aggregates)</i>	Traditional organizational networks	Publish. retrieve/access
<i>Non-human agents (webbots, avatars, etc.)</i>	Push technology applications (e.g. Infogate)	P2P technology applications (e.g. avatars, Napster, Gnutella, SETI, the Grid)

New media are themselves important 'nodes' acting as agents or associates within the network (Jones and Jasek, 1997). These non-human (also referred to in various chapters in this part as 'intelligent', 'smart' or 'artificial') agents carry out many of the organizational tasks traditionally associated only with human agents. Some of these agents, called 'avatars', serve as digital incarnations of human agents. They are designed by human agents to act as semi-autonomous agents interacting with other agents, be they human, knowledge repositories or others' avatars. Based on the personal information invested in them by their human agents, they can schedule meetings, continually monitor or search for specific information, carry out trades, and bid in auctions. While avatars are agents that have human counterparts, other agents such as 'knowbots' (knowledge robots) have their own independent identity. They are programmed to repeat structured tasks, such as continually searching the web for topics of interest. Knowbots serve as active knowledge repositories continually retrieving information on specific topics from other human or non-human agents and proactively 'pushing' this information to other agents when they may have a need for it. Still other agents facilitate collaboration among human agents by offering information or 'eisted' summaries relevant to the current discussion or managing floor control by inviting contributions from participants who have not contributed.

Clearly new media, serving in their newfound capacity as non-human agents, are going to play an increasingly important role in twenty-first-century forms of organizing. It is therefore critical for researchers to better understand their contributions and limitations and incorporate these into theoretical and empirical investigations. Several chapters in this part offer innovative approaches that will advance our theoretical and methodological ability to understand the role of new media as agents of organizing.

FROM NETWORKS IN ORGANIZATIONS TO NETWORK AS ORGANIZATION

In his classic book *Images of Organization*, Morgan (1986) recounts how metaphors shape the ways in which we conceptualize and understand the organizations we investigate. They shape the

research questions we ask and the methods we use to answer those questions. They privilege certain issues while concealing others. In the industrial era, the machine served as a dominant metaphor shaping our conceptualization of organizations. Reflecting changes in contemporary societal values, the dominance of the organization-as-machine metaphor was replaced in succession by organization-as-living systems in the 1970s, organization-as-cultures in the 1980s, and organization-as-computers in the 1990s. With the explosion of the Internet and the web, there is little argument that the dominant metaphor today is organization-as-networks. While there has been considerable scholarship on networks in organizations over the past three decades (for reviews see Krackhardt and Brass, 1994; Monge and Contractor, 2001; Monge and Eisenberg, 1987), embracing the metaphor of organization-as-network has led to a unprecedented focus on the ways in which characteristics of the network influence, and are in turn influenced by, the process of organizing. Considering organizations-as-networks invites a reconceptualization of perennial organizational issues such as information, resources, trust, cultural values, in terms of relations and flows. The metaphor prompts researchers to focus attention on why we as individuals, groups and organizations create, maintain and dissolve our various network relations. Consistent with this shift, many of the chapters in this part not only focus attention on the network infrastructure supported by the new media but also characterize the process of organizing as networks and flows. Particularly noteworthy is the attention in several chapters to the the role of knowledge management in organizing. The concept of knowledge management (Nonaka and Takeuchi, 1995) was popularized in the 1990s at a time when organizations-as-computers was the dominant metaphor. Consistent with that metaphor, knowledge management was conceptualized as a stand-alone repository for capturing organizational expertise. As some of the chapters discuss, this notion of knowledge management is problematized at a time when the intelligence is seen as residing in the network rather than in the nodes that may be connected to the network.

Prior research on networks has focused almost exclusively on relations between humans or aggregates of humans (such as groups and

organizations). Table III.1 describes how this represents only the top left cell when we expand our notion of the network to include the non-human agents discussed earlier. Extending the network into the remaining three cells provides an opportunity to examine how new media influence the organizing process by providing network links from human to non-human agents (for instance, individuals publishing and retrieving information from databases), from non-human to human agents (for instance, knowbots 'pushing' information to individuals) and from non-human to non-human agents (for instance, an individual's avatar coordinating schedules with another individual's avatar). Two of the chapters in this part identify this conceptualization of the network as influential in shaping the future research agenda on new media and organizing.

In conclusion, the chapters in this part offer a thoughtful review and critique of the ways in which we have attempted to understand the relationship between new media and organizing. They draw upon theories and research from a wide variety of disciplines including anthropology, communication, computer science, decisions sciences, economics, management, psychology and sociology as well as several interdisciplinary endeavours such as the area of computer-supported cooperative work. While they generally agree on the limitations of prior research they offer distinct and, in some cases, disparate visions on the future conduct of inquiry. Taken together, these chapters capture the intellectual excitement, the breadth of theoretical frameworks, and the methodological diversity we will need to advance our understanding of the interrelationships between new media and organizing.

REFERENCES

- Ahujn, M.K. and Carley, K.M. (1999) 'Network structure in virtual organizations', *Organization Science*, 10: 741-57.
- Badaracco, J.L. Jr (1991) *The Knowledge Link: How Firms Compete through Strategic Alliances*. Boston, MA: Harvard University Press.
- Bell, D. (1973) *The Coming of Post-Industrial Society*. New York: Basic.
- Beniger, J.R. (1986) *The Control Revolution: Technological and Economic Origins of the Information Society*. Cambridge, MA: Harvard University Press.
- Castells, M. (1996) *The Rise of the Network Society*. Vol. 1 of *The Information Age: Economy, Society and Culture*. Oxford: Blackwell.
- Chandler, A.D. (1977) *The Visible Hand*. Cambridge, MA: Harvard University Press.
- DeSanctis, G. and Poole, M.S. (1997) 'Traditions in teamwork in new organizational forms', in *Advances in Group Processes*, vol. 14. Greenwich, CT: JAI. pp. 157-76
- DiMaggio, P., Hargittai, E., Neuman, W.R. and Robinson, J.P. (2001) 'Social implications of the internet'. *American Review of Sociology*, 27: 307-36.
- Goldman, S.L., Nagel, R.N. and Preiss, K. (1995) *Agile Competitors and Virtual Organizations: Strategies for Enriching the Customer*. New York: Van Nostrand Reinhold.
- Hedlund, G. (1986) 'The hypermodem MNC - a heterarchy?', *Human Resource Management*, 25: 9-35.
- Jarvenpaa, S. and Ives, B. (1994) 'The global network organization of the future: information management opportunities and challenges', *Journal of MIS*, 10: 25-57.
- Jones, P.M. and Jasek, C.A. (1997) 'Intelligent support for activity management (ISAM): an architecture to support distributed supervisory control', *IEEE Transactions on Systems, Man, and Cybernetics*, special issue on 'Human Interaction in Complex Systems', 27 (3): 274-88.
- Krackhardt, D. and Brass, D.J. (1994) 'Intra-organizational networks: the micro side', in S. Wasserman and J. Galaskiewicz (eds), *Advances in Social Network Analysis: Research in the Social and Behavioral Sciences*. Thousand Oaks, CA: Sage. pp. 207-29.
- Malone, T.W. and Laubacher, R.J. (1998) 'The dawn of the e-lance economy', *Harvard Business Review*, September-October: 145-52.
- Malone, T.W. and Rockart, J.F. (1991) 'Computers, networks, and the corporation'. *Scientific American*, 265: 128-36.
- Markus, M.L. and Robey, D. (1988) 'Information technology and organizational change: causal structure in theory and research', *Management Science*, 34 (5): 583-98.
- Miles, R.E., Snow, C.C., Mathews, J.A., Miles, G. and Coleman, H.J. Jr (1997) 'Organizing in the knowledge age: anticipating the cellular form', *Academy of Management Executive*, 11 (4): 7-24.
- Monge, P.R. and Contractor, N.S. (2001) 'Emergence of communication networks', in F.M. Jablin and L.L. Putnam (eds), *New Handbook of Organizational Communication*. Newbury Park, CA: Sage. pp. 440-502.
- Monge, P.R. and Eisenberg, E.M. (1987) 'Emergent communication networks', in F.M. Jablin, L.L. Putnam, K.H. Roberts and L.W. Porter (eds), *Handbook of Organizational Communication*. Newbury Park, CA: Sage. pp. 304-42.
- Monge, P.R. and Fulk, J. (1999) 'Communication technology for global network organizations', in G. DeSanctis and J. Fulk (eds), *Shaping Organizational Form: Communication, Connection, and Community*. Thousand Oaks, CA: Sage.
- Morgan, G. (1986) *Images of Organization*. Newbury Park, CA: Sage.
- Nohria, N. and Berkley, J.D. (1994) 'The virtual organization: bureaucracy, technology, and the implosion of control', in C. Heckscher and A. Donnellon (eds), *The Post-Bureaucratic Organization: New Perspectives on Organizational Change*. Thousand Oaks, CA: Sage. pp. 108-28.
- Nonaka, I. and Takeuchi, H. (1995) *The Knowledge-Creating Company: How Japanese Companies Create*

- the Dynamics of Innovation*. New York: Oxford University Press.
- O'Mahony, S. and Barley, S.R. (1999) 'Do digital telecommunications affect work and organization? The state of our knowledge', in *Research in Organizational Behavior*, vol. 21. Greenwich, CT: JAI. pp. 125-61.
- Pool, I. de S., Decker, C., et al. (1981) 'Foresight and hindsight: the case of the telephone', in I. de S. Pool (ed.), *Social Impacts of the Telephone*. Cambridge, MA: MIT Press. Pp. 127-57.
- Powell, W.W. (1990) 'Neither market nor hierarchy: network forms of organization', in B. Staw (ed.), *Research in Organizational Behavior*, vol. 12. Greenwich, CT: JAI Press. pp. 295-336.
- Raymond, E.S. (1999) *The Cathedral and the Bazaar. Musings on Linux and Open Source by an Accidental Revolutionary*. Sebastopol, CA: O'Reilly.
- Rice, R.E. (1994). 'Network analysis and computer-mediated communication systems', *Advances in Social Network Analysis*. Newbury Park, CA: Sage. pp. 167-203.
- Sabel, C.F. (1990) 'Moebius-strip organizations and open labor markets: some consequences of the reintegration of conception and execution in a volatile economy'. in P. Bourdieu and J. Coleman (eds), *Social Theory for a Changing Society*. Boulder, CO and New York: Westview and Russell Sage Foundation.
- Weber, M. (1947) *The Theory of Economic Organization*. New York: Free Press.
- Weber, M. (1978) *Economy and Society*. Berkeley, CA: University of California Press.
- Williamson, O.E. (1996) 'Economic organization: the case for candor'. *Academy of Management Review*, 21: 48-57.
- Yates, J. (1989) *Control through Communication: the Rise of System in American Management*. Baltimore: Johns Hopkins University Press.