

4 BLURRING THE BOUNDARIES: DISENTANGLING THE IMPLICATIONS OF VIRTUAL SPACE

Anita Greenhill
School of Computing and Information Technology
Griffith University
Australia

Abstract

Virtual space provides more challenges to business organizations than simply its status as a new spatial phenomena. The conceptualization of traditional organizational structures is altered within virtual space. The significance of this observation is compounded when traditional operational forms of organization continue to maintain fixed or impenetrable boundaries. Virtual space enacts a blurring of boundaries, which extends geographical demarcations and challenges an organization's persistence within the postmodern era. While many discussions regarding the virtual organization have centered on the notion that an alteration to traditional structural forms has occurred (Cooper and Burrell 1988; Kraft and Truex 1994; Lovatt 1997), postmodernity embeds the realization that organizations, or any social institution, operate in a state of continual change.

Keywords: Boundaries, virtual space, time, space, postmodernism, information systems, spatial analysis.

Introduction

The utilization of postmodern and critical analysis can assist in informing the field of information systems to the complexities of conducting organizations within virtual

reality. Similarly, these approaches highlight that this form of spatiality does not immediately or necessarily conflate the presence of virtual space with the virtual organization, arguing instead that this particular space is but one articulation of a series of “venues” for the virtual organization. Research in the information systems field in turn can utilize an awareness of the postmodern condition to escape many of the arbitrary limitations associated with Taylorism and modernism.

Postmodern Perspectives on the Organization

Postmodern perspectives on the organization differ from those described as modernist and, in part, are concerned with understanding whether society is in an historical phase of postmodernity (Foster 1985, p. ix). Questioning whether the organization is solely a methodological concern or is “simply” a social construct with particular cultural and historical meanings provides another possibility to understanding organizational existence through information systems. This possibility for an imprecise existence arguably detracts from the practical application of postmodernism. However, the detailed consideration of social and cultural phenomenon that a postmodern analysis provides can contribute to a disentangling of the implications that virtual space can offer organizations. The existence of meta-narratives utilized within the social sciences and information systems construct an analytical framework that perpetuates particular notions of form or structure. Positivist knowledge assertions utilize a base assumption that relies on the perpetuation of the distinction of “us and them,” which reinforces a framework of “otherness.” This notion is tied to the assertion that there is a knowable reality which is objective and “out there” rather than the consequence of mutual, or social, constructions and the association of signifiers (the sign/the word) and signified (the concept) in uncertain and indefinite processes of signification (Baudrillard 1983). Postmodernity enables a challenge to the conceptual framework of positivism that has a privilege within information systems. This provides opportunity to further explore the full range of possibilities within organizational existence. This claim identifies the absence of self-reflexivity in the development of a perspective dealing with social phenomena and the organization. An adoption of an anti-positivist position enables information system analysis to consider the consequences of the researcher when describing and analyzing the organization. This enables reconsideration as to whether researchers are projecting themselves and their vision of that organization into the consequent analysis.

These are significant considerations that can contribute to existing concepts within information systems analysis. These issues are the central theme of this paper and reflect the author’s current area of research, which considers virtual space blurring the boundaries of organizations. This paper begins with definitions and discussion surrounding the central tenets: the organization and virtual space. This discussion utilizes the tautology of postmodern thought to demonstrate the significance that this approach has as an analytical approach to information systems.

Methodology

This paper is exploratory in its discussion of virtual space and information systems operating within the virtual environment. An initial observation of information systems operating in the virtual environment suggests that they are disentangled from the geographically and culturally specific frameworks of “real life.” However, by utilizing qualitative analysis and drawing upon existing literature in the fields of information systems, organizational analysis, and systems theory, a range of considerations can be identified. The discussions of space utilized in this paper and much of the theoretical grounding is developed from Elias (1978), Lefebvre (1991) and Soja (1989, 1996), while postmodern theorists are utilized to consider the significance an alternative theoretical approach can provide for the field of information systems.

Information Systems in Change

The manner in which employers and employees receive information within organizations is changing. Sharing information, irrespective of the form that it takes, fulfills a specific task within the confines of the organization. Rituals of discourse shape the receipt of information (Foucault 1990, p. 1162) by governing its interaction and directing its outcomes. This discourse limits the fluidity of possibilities through which specified information can be obtained. These structures and restrictions impact upon the form and context of organizational activity through which information is transmitted and received. Casual or personal forms of information sharing are, however, quite different from those information systems operating at the administrative and “whole-of-organization” level. The distinctions between these systems are more apparent in real life organizations than currently found within virtual interaction. This distinction also marks the differences of real life from virtual existence. The information systems most readily identified with the real life organization are those which enable specific outcomes and goals through the social construction and establishment of boundaries. Specific outcomes, from the use of information systems in virtual space, must also be achieved if the guiding rationale of their cultural formation is to continue and, importantly, for the primary objectives of the system to be achieved. The ritual of discourse in real life organizational existence directly informs the construction of virtual organizations.

The Virtual Organization

The presence of electronically mediated virtual environments impacts on the information systems operating within the organization. The information systems operating in the virtual organization are an extension of the information systems of the “real world” and do not embrace the full articulation of virtuality that is possible. The traditional and hierarchical organizational structures of organizations, when contrasted against the dynamic forms of virtual social space and virtual organizations, are less fluid and impede the development of organizational possibilities in a virtual environment (Jorn, Duin Hill and Wahlstrom 1996, p. 190). Institutional virtuality—virtual presence—incorporates the compression of time and space (Baudrillard 1988, p. 35) as part of its organizational

formation. Virtual space, when utilized as an interactive medium, is most suited to those information systems relating to services that are more transient or more dynamic in nature. This situation is reflected in the types of information that are being adapted to the virtual face of real life organizations. For example, in tertiary education, information relating to academics and their current research, as well as existing courses and administrative advice, predominates. The application of virtual billboards for the dissemination of information has been highly successful. The challenge for educators has been to successfully transform some or all of the experiences of real life learning environments into a virtual learning environment. This task has seen “total” electronic environments such as multi-user dungeons (MUDs) and multi-user dungeons which are object orientated (MOOs) adapted to educational purposes.

Virtual universities currently exist as amalgams of classrooms and electronically warehoused information but remain restricted by the monolithic tertiary institution’s traditional organizational models. The traditional and hierarchical structures of the university rely upon rules and regulations, which stem from older educational practices. For example, the concept of the “lecture,” and lecture theaters themselves, remove any doubt as to who provides the information the student will then be expected to learn. These rooms maximize the hierarchical position of the lecturer and reinforce the student’s involvement in the machinations of mass education. These relationships construct and reinforce the cultural norms and relationships of the university and also distinguish it from other spaces of contemporary society. The virtual classroom, defined by a lack of physicality, quickly distorts and challenges these social structures and distinctions (Penny 1993, p. 19). Virtual universities construct rooms as an environment of exchange for prospective students. These virtual rooms are intended to induce traditional classroom conduct through the cultural associations evoked by a rudimentary simulation of such an environment.

The adaptation of real life information systems does not serve as an adequate model for the fluidity of virtual space. The development of a virtual organization is a vastly more complex proposition than the simple juxtaposition of two words. It is a challenge that seeks to translate the solid to the ethereal. It is, however, not possible for an organization operating under modernist frameworks to mimic the structures of commercially orientated virtual organizations. The loose application of extended boundaries through the application of information technology (Olson 1997, [1]) does not automatically predicate a virtual organization.

Virtual Space and Cyberspace

To appreciate the changes that virtuality imparts upon an information system, it is important to position virtual space as a phenomenon that is not synonymous with the Internet (Adrian 1995, [5]). Cyberspace is the spatial phenomena created through the processes of contemporary high technology and is utilized to facilitate human interaction in a manner that is proxy to the capabilities of their bodies. Cyberspace encompasses, for example, the space crafted within video games, the operating theater of remote surgery, and the virtual lathe of Computer Aided Manufacturing. Much of the popular media coverage that equates cyberspace with the Internet consequently avoids

comparative or inclusive considerations of other spaces (Hearn and Manderville 1995, p. 92). The popularization of cyberspace seeks to maximize the usability of the environment and has driven the development toward automatic and transparent commercial transactions. Information, in this context, is understood purely in terms of consumerability and economic value. The hope, if the "Internet Press" can be believed, is to reflect a space in which virtual business maximizes the simulation of safe shopping environments familiar to consumers in the "real" world. Information is reduced in this equation to a coarse dichotomy of objects: those that are desired and obtainable and those that are not. Beyond this bifurcation of desire, Frampton (1985, p. 17) describes what we see as "increasingly polarized between, on one hand, a so-called "high-tech" approach predicated exclusively upon production and, on the other, the provision of a "compensatory facade" to cover up the harsh realities of this universal system." This facade is also found in the "graphical" web browsers, which obscure existing information systems and permits organizations to translate existing functions and the rationale of capitalism into virtual space. Netscape Navigator, an example of one of the windows onto cyberspace, encapsulates the borrowing/plug-in philosophy of post-modern architectural design by enabling a facade that is extendible, customizable, and readily changed.

In cyberspace, information is transferred from one computer to another with dynamic mechanization. When information is not shared, participation in the information economy is denied. Information existing on the edge of the information economy is removed from the exchanges that systematically perpetuate the existence of this economy. The transference of knowledge as shared pieces of communicated information is the central rationale of this space. This spatially aware culture of exchange is not a unique phenomenon. The maintenance of all social constructions relies upon similar exchanges. Myth, legends, and particular cultural knowledge rely upon the maintenance of information networks across time and space. What is different about information exchanges in cyberspace and other spaces of social constructions is that the exchange occurs within a single communication medium.

Other interactive processes are also necessary for the conduct of business and the administration of organizations. It is the ability to consume material goods and physically bound services that separates the interactivity of organizations located in real life from those occupying virtual space. Organizations occupying virtual space differ from the real life organizational structure because it is information, and not physical items, that is transacted. The "presence" of a home page does not guarantee visitations, however, or incorporation into the information economy. Virtual organizations and social organizations generally, regardless of their motivating force or projected goals, rely upon mutually shared communication to persist. In cyberspace, the processes of communication differ from those of real life. The virtual environment and its configuration as a compressed form of time and space is heavily reliant upon the continuous availability of technologically mediated exchanges (Barrett, Sahay, and Walsham 1996, p. 42). This is an important consideration for defining space in terms of bounded differences.

Time and Space

“Virtuality” has an association of time and space. An object is understood in terms of its existence, its connection to “reality,” or its mathematical or scientific representation (Lefebvre 1991, p. 1). A virtual “thing” has no physical existence, as such, but is made to appear so through software applications (Jones 1993, pp. 29-33). The object in virtual space has no physical construct. The virtually constructed object can now be understood in terms of its existence in a space that has been created through information technologies. Wark (1991) describes this specific spatial development by claiming that “where we no longer have roots we have aerials. Where we no longer have origins we have terminals.” Spatial positioning, even positioning that is undertaken virtually, is understood in terms of relationships to objects and particularly to the human and more particularly the Western notion of humanism and the absence of the Cartesian object (Jones 1993, p. 25). Significantly, the existence of virtual space challenges existing notions of bound space by blurring the boundaries that “reality” assumes. Reality that is constructed via existing monolithic structures, “things” that dominate the spaces of daily life, can be critically presented as meaning-stabilizing entities. The existence of objects in cyberspace does not require physical presence to determine social meaning. This dissolution of the solid also presents a challenge to modernist organizational constructs. Similarly, postmodern ideology seeks to challenge such understandings. Deleuze and Guattari (1983) decenter anthropocentric philosophies by arguing that humans are appendages to machines. In this perspective, machines are the active forces that produce flows of matter/energy. It is the machine that divides, defines, and then codifies these matter flows onto the bodies of humans, which consequently establishes a network of boundaries. In a similar vein to Deleuze and Guattari’s non-human centered analysis, spatial examination provides an alternative perspective to understanding, which can then be applied to information systems.

Elias’ description of “spatialization” describes space as an empty container that we are always attempting to fill. The separation of the individual from the social system reinforces constructs that assert the presence of an ego residing “within” or alternatively “inside” the individual, while society is somehow positioned “outside” (Elias in Cooper 1989, p. 484). In this form of analysis, social systems occupy a boundless space outside the individual and are disjointed from the bounded space defined by the body. Virtual reality challenges the dominant notion of dichotomized binaries. The individual’s presence and notion of self are not so easily positioned in distinction to the interactions of cyberspace (Meyrowitz 1985, p. 117). The participants cannot locate their interactions at the terminal on which they are working, at the many hundreds of terminals in which their message might be posted, to, or along the electronic cables that create global (or at least Western) connectivity. This experience makes “place” an increasingly complex understanding as the decreased association of communications with physical presence challenges dualistic representations of physicality and spatiality. Apart from a few exceptions (see Baskerville, Travis, and Truex 1992; Cooper 1989; Cooper and Burrell 1988; Kraft and Truex 1994; Ngwenyama 1991). “Modern” organizational forms tend to be analyzed and constructed from these positions. They are predominant in discussions of the organization’s physical construction and reinforce underlying assumptions when studying information systems.

The organization unbound in the physical sense from a particular location and therefore spatial associations can be described as virtual. In this manner, all organizations have an element of virtuality to them. However, organizations, as part of their operating rationale, seek to minimize discrepancies in time and space. The traditional Weberian notion of the organization and its structured efforts to contain the unexpected relies on a calculation of efficiency relating directly to the structuring of time and space (Cooper and Burrell 1988, p. 92). Efficient workers, businesses, and organizations are assessed as holding an economic worth. Operations in virtual space, however, are conducted in a compressed state in which vast distance and separate aspects of real life spaces are immediately accessible. The associations of time and space are formulated according to the scale of weeks, days, hours, minutes, and seconds. This scale is inappropriate to virtual space and the interaction that occurs there, requiring different social constructions of scales and different associations of time to space. A reassessment of economic worth within the measure of these scales is also needed. Kraft and Truex (1994, 113) describe organizations operating in virtual space with many names, “the disparative organization, the imaginary organization, the adaptive organization, the learning organization, the flexfirm, the agile enterprise, the pulsating organization, the network organization and, inevitably, the virtual organization.” These organizational forms are constructed as fluid entities and integrate the knowledge of inevitable and continual change into their structure. The structures and boundaries of these organizations are always at a point of emergence and realignment.

Traditional Representations of Organizations

The employee, employer, and consumer all carry and convey particular representations of the organization. However, these representations are generally through traditional rule and task orientated perspectives that emphasize completing a set task by a number of individuals in a cooperative manner. It is important to position the traditional notions of organization in juxtaposition to the application of a postmodern position on this concept.

Understanding of the organization has been dominated by Weber’s interpretation of the modern bureaucratic organization as a *process* (Cooper and Burrell 1988, p. 92). This process reasserts the dominance by the organization of the social and physical environment rather than the organization *per se*. This suggests that the rational organization exist as a response to forces that cannot be understood or controlled. The organization progresses as a series of responses to “errors” as countermaneuvers to this uncertainty, establishing within this process maximum stability and consensus (Cooper and Burrell 1988, p. 93). This position typifies notions of “us” and “them” that are constructed to position those within a rational organization as different from those outside it. The members of an organization understand its machinations from within this bounded existence. Those experiencing a social reality within the organization adhere to particular rules of existence for the organization while those outside this border may not. Maintenance of these boundaries minimizes irrationality and unpredictable occurrences within these boundaries but only for those experiencing the social reality found within those boundaries. However, this position problematizes the understanding of organizational structure. This view establishes an emic perspective and potentially reduces prospects of organizational development.

The prevailing definition of an organization, and particularly in its administrative and economic role, produces systems of social rationality (Cooper and Burrell 1988, p. 92). Modernity seeks to perfect itself through the power of rational thought as the claimed essential essence of humanity. Postmodernism strives for critical and highly contextual positions that challenge metanarratives, such as the ethnocentric rationalizations of the Enlightenment. Metanarratives are double-edged swords within the fields of information systems, management, and education. The need to formulate parameters of understanding for practical application becomes a process of reaffirmation and consensus-making, which minimizes change and the voice of critique.

Blurring the Boundaries

The increasing utilization and globe spanning existence of electronically mediated social exchange networks is not defined with simplistic categorization. The development of organizations in virtual space and equally the development of virtual organizations in “real space” reveal the contradictions found in organizations constructed within a modernist framework. The virtual organization is not a fixed entity bound to a physical location or predetermined system. The tautology of the “virtual organization” signifies the difficulty of effacing spatial physicality or geographic location from an organization or bureaucracy that is built upon implied physicality.

The modernist tradition represents organizations and bureaucracies as a “bound and coherent agglomerations of structures, rules, regulations, goals and shared rationality which emphasizes performance enhanced efficiencies” (Cooper and Burrell 1988, p. 96). These performance driven and economic models craft a reality defined by an ordering of social relations within the framework of functional rationality and a knowable and objective reality. The postmodern turn in literary studies and social theory found in the writings of Lyotard (1993), Baudrillard (1983), Foucault (1990) and, in a slightly different form, Derrida (1994) provides a shifted emphasis and prioritization for research presented in the name of information systems. Functionalist examinations of an organization present it as operating below maximum economic efficiency in an effort to fix boundaries that minimize unpredicted and undesirable outcomes (Weber 1962). In this sense, discussion of the organization as an organism typifies modernist analysis and encourages the theorist to draw boundaries around the subject of study and the environment. In this instance, the researcher fixes their concern with a somewhat arbitrary relationship between the organization and the environment (Morgan and Smirchich 1980, p. 496).

Existing Research into Related Topic Areas

The utilization of the virtual environment for business and organizational practice is rapidly increasing (Jorn, Duin Hill, and Wahlstrom 1996; Olson 1997; van Alstyne and Brynjolfsson 1996). For this reason, examinations and adaptations of the implementation of conventional or traditional information systems practices is needed. Although there are a growing number of studies being carried out about the World Wide Web, the Internet, and Virtual Reality, they differ from the approach outlined in this paper. There

is a significant amount of study on electronic commerce and how best to utilize the Internet and WWW for businesses and organizational practices (Ciborra 1996; Handy 1995) and for profit-orientated ventures (Handy 1995; Kraft and Truex 1994). There is also much discussion on the virtual organization (see Bandow 1998; Cavaye et al. 1997; Jorn, Duin Hill, and Wahlstrom 1996; Olson 1997) and the workplace effects that e-mail, teleconferencing, and virtual interactions have on organizations (Jorn, Duin Hill, and Wahlstrom 1996; Olson 1997) and Transnational Information Systems (TIS) (Bandow 1998; Cavaye et al. 1997). These studies tend to utilize group systems support (GSS) (Atkinson 1997), computer supported cooperative work (CSCW) (Kristofferson 1994), management strategies (Hovav 1998), decisions support systems (DSS) (Takao 1998), and existing notions of the quality of Web interface to achieve the desired output of the information system. The ideas presented in this paper begin the development of a research strategy that emphasizes critical analysis by embracing an alternative theoretical approach to information systems (see Ngwenyama 1991). It is suggested here that this can be achieved by employing the tenets of postmodern analysis. Particularly, the application of a reflexive position can be utilized when analyzing or researching an organization. This identifies the researcher's position within the research framework, as well as clarifying the overarching theoretical application of organizational study. These approaches alleviate some of the contradictions in the researcher's assumptions and limit imposing presupposed notions onto the organizational practices of those being researched.

The ideas presented in this paper differ from those in the information systems literature in a number of assumptions. First, the virtual environment is not a given, nor is it a continuation of existing technological infrastructure. Second, it is an examination of the philosophical importance of the creation and utilization of a space (Davies, Harvey, and Roll 1993) for their impact on information systems. Third, there is a significant shift from the concerns of a human centered interpretation, which allows the researcher to uncover the differences in operation of the information system in both the virtual and real life environments. It is argued that, through the utilization of postmodern and alternative theoretical positions, the implications for information system operating within organizations, virtual or otherwise, can be viewed differently from those of modernistic forms of scientific enquiry. This observation is further compounded when this theoretical position is applied to nontraditional organizations that are not maintained within fixed boundaries of real life and specifically those information systems operating from within virtual space.

Conclusion

Four specific recommendations are put forward in this paper that information systems researchers could consider in future studies. These can be particularly considered for the implications of virtual space on organizations. First, the adoption of detailed consideration of any social or cultural phenomena that postmodern analysis requires. Second, that there exists within the social sciences and the field of information systems the construction of a range of metanarratives that perpetuate particular notions of form or structure, e.g., modern vs. postmodern. Third, positivistically grounded assertions require assumptions that rely on the existence of a knowable and definable situation: a

position of “us” and “them,” which reinforces the framework of “otherness.” Fourth, this position identifies the absence of self-reflexivity when research and analysis of the information system occurs. Therefore, information system researchers should consider the consequences of their research when describing and analyzing the organization, projecting themselves and their vision of that organization into the consequent analysis. These notions are significant considerations, which can contribute to the existing modes of analysis and appraisal being utilized in the area of information systems. They are also necessary when examining virtual space and the blurring boundaries of organizations.

Future Directions and Studies

The assertions put forward in this paper will be further explored and developed in a doctoral thesis. The thesis will examine the operation and utilization of informal and formal information systems within virtual space. This research, in line with the discussion above, will attempt to utilize and adapt an alternative theoretical and methodological position developed from postmodern analysis. A reflexive position will be utilized through examining the information system via spatial analysis.

References

- Adrian, R. “Infobahn Blues,” in *C Theory*, http://www.ctheory.com/a-inforbahn_blues.html, 1995.
- Atkinson, D. “An Exploration of Verbal Participation at GSS Meeting” in *Proceedings of the Eighth Australasian Conference on Information System*, D. J. Sutton (ed.), Adelaide, 29 September–2 October 1997, 1997, pp. 448-467.
- Bandow, D. “Working with the Borg: Trust, Systems Development, and Dispersed Work Groups” in *Proceedings of the 1998 ACM SIGCPR Conference*, R. Agarwal (ed.), Boston, MA, March 26-28, 1998, pp.163-169.
- Barrett, M.; Sahay, S.; and Walsham, G. “Understanding IT and Social Transformation: Development and Illustration of a Conceptual Scheme,” in *Proceedings of the Seventeenth International Conference on Information Systems*, J. I. DeGross, S. Jarvenpaa, and A. Srinivasan (eds.), Cleveland, OH, December 16-18, 1996, pp. 42-50.
- Baskerville, R.; Travis, J.; and Truex, D. “Systems Without Method: The Impact of New Technologies on Information Systems Development Projects,” in *The Impact of Computer Supported Technologies on Information Systems Development*, K. E. Kendall, K. Lyytinen, and J. I. DeGross (eds.), North-Holland, Amsterdam, 1992, pp.241-269.
- Baudrillard, J. *Simulations*, Semiotext, New York, 1983.
- Baudrillard, J. “The Year 2000 Has Already Happened,” in *Body Invaders: Sexuality and the Postmodern Condition*, A. Kroker and M. Kroker (eds.), Macmillian, Basingstroke, England, 1988.
- Cavaye A.; Mantelaers, P.; van de Berg, W.; and Zuurmond, A. “Towards Guidelines for Development and Management of Transnational Information Systems” in

- Proceedings of the Eighth Australasian Conference on Information System*, D. J. Sutton (ed.), Adelaide, 29 September–2 October, 1997, pp. 64-69.
- Ciborra, C. U. "Improvisation and Information Technology in Organizations" in *Proceedings of the Seventeenth International Conference on Information Systems*, J. I. DeGross, S. Jarvenpaa, and A. Srinivasan (eds.), Cleveland, OH, December 16-18, 1996, pp. 369-380.
- Cooper, R. "Modernism, Post Modernism and Organizational Analysis 3: The Contribution of Jacques Derrida," *Organizational Studies*, 1989, pp. 479-502.
- Cooper, R., and Burrell, G. "Modernism, Postmodernism and Organizational Analysis: An Introduction," *Organizational Studies* (9:1), 1988, pp. 91-112.
- Davies, L.; Harvey, W.; and Roll, A. "Computer Artefacts in Knowledge Networking," in *Proceedings of the Fourth Australian Conference on Information Systems*, Brisbane, 28-29 September, 1993, pp. 459-473.
- Deleuze, G., and Guattari, F. *Anti-Oedipus: Capitalism and Schizophrenia*, University of Minnesota Press, Minneapolis, 1983.
- Derrida, J. *Specters of Marx* (translated by Peggy Kamuf), Routledge, New York, 1994.
- Elias, N. *The Civilizing Process: The History of Manners*, Blackwell, Oxford, England, 1978.
- Foucault, M. "The Order of Discourse" in *The Rhetorical Tradition*, P. Bizzell and B. Herzberg (eds), Bedford Books, Boston, 1990.
- Foster, H. *Postmodern Culture*, Pluto Press, Sydney, 1985.
- Frampton, K. "Towards Critical Regionalism: Six Points for an Architecture of Resistance" in *Postmodern Culture*, H. Foster (ed), Pluto Press, Sydney, 1985.
- Handy, C. "Trust and the Virtual Organization," *Harvard Business Review*, May/June, 1995, pp. 40-50.
- Hearn G., and Manderville T. "The Electronic Superhighway: Increased Commodification or the Democratization of Leisure?" *Media Information Australia* (75), February, 1995, pp. 92-101.
- Hovav, A. "Social Behavior in Professional Meetings: A Video Analysis of a Panel Discussion," in *Proceedings of the 1998 ACM SIGCPR Conference*, R. Agarwal (ed.), Boston, March 26-28, 1998, pp. 159-162.
- Jones, S. "Cultural Maintenance and Change," *Media Information Australia* (69), August, 1993, pp. 23-37.
- Jorn, D.; Duin Hill, A.; and Wahlstrom, B. "Designing and Managing Virtual Learning Communities," *IEEE Transactions of Professional Communication* (39:4), December, 1996, pp. 183-191.
- Kraft, P., and Truex, D. "Postmodern Management and Information Technology in the Modern Industrial Corporation," in *Transforming Organizations with Information Technology*, R. Baskerville, S. Smithson, O. Ngwenyama, and J. I. DeGross (eds.) North Holland, Amsterdam, 1994, pp. 113-127.
- Kristofferson, S. "The Introduction of CSCW in a Social Constructivism Perspective: Six New Challenges for Groupware Developers," in *Proceedings of the Seventeenth Information Systems Research Seminar in Scandinavia*, P. Kerola, A. Juustila, and J. Jarvinen (eds.), Finland, August 7-9, 1994, pp. 482-496.
- Liotard, J. *Political Writings*, UCL Press, London, 1993.
- Lefebvre, H. *The Production of Space* (translated by D. Nichololson-Smith), Blackwell, Oxford, England, 1991.

- Lovatt, M. "Herding Cats: A Case Study on the Development of Internet and Intranet Strategies Within an Engineering Organization" in *Proceedings of the 1997 SIGCPR (Special Interest Group on Computer Personnel Research) Conference*, San Francisco, April 1, 1997, pp. 104-109.
- Morgan, G., and Smircich, L. "The Case for Qualitative Research," *Academy of Management Review* (5:4), 1980, pp. 491-500.
- Meyrowitz, J. *No Sense of Place: The Impact of Electronic Media on Social Behavior*, Oxford University Press, New York, 1985.
- Ngwenyama, O. K. "The Critical Social Theory Approach to Information Systems: Problems and Challenges," in *Information Systems Research: Contemporary Approaches and Emergent Traditions*, H. E. Nissen, H. K. Klein, and R. Hirschheim (eds.), North-Holland, Amsterdam, 1991, pp. 267-280.
- Olson, N. *Virtual Organizations: Towards a Framework for Understanding*, <http://www.cisr.swin.edu.au:80/announce/seminar/sem2/25october.html>, 1997.
- Penny, S. "Virtual Body Building," *Media Information Australia* (69), August 1993, pp. 17-22.
- Soja, E. *Postmodern Geographies*, Verso, London, 1989.
- Soja, E. *Thirdspace*, Blackwell Publishers Inc., Cambridge, England, 1996.
- Takao, S. "The Effects of Two Modes of Video-Conferencing on the Quality of Group Decisions," in *Proceedings of the 1998 ACM SIGCPR Conference*, R. Agarwal (ed), Boston, March 26-28, 1998, pp. 156-158.
- Van Alstyne, M., and Brynjolfsson, E. "Electronic Communities: Global Villages or Cyberbalkanization?" in *Proceedings of the Seventeenth International Conference on Information Systems*, J. I. DeGross, S. Jarvenpaa, and A. Srinivasan (eds.), Cleveland, OH, December 16-18, 1996, pp. 80-98.
- Warne, L. "Conflict as a Factor in Information Systems," in *Proceedings of the Eighth Australasian Conference on Information System*, D. J. Sutton (ed.), Adelaide, 29 September-2 October, 1997, pp. 378-390.
- Wark, M. "From Fordism to Sonyism: Perverse Readings of the New World Order," *New Formations* (15), Winter, 1991.
- Weber, M. *The Protestant Ethic and Spirit of Capitalism*, Allen and Unwin, London, 1962.

About the Author

Anita Greenhill is a research associate at the School of Computing and Information Technology, Griffith University, Brisbane, Australia. She is currently completing a Ph.D., examining the implications of information consumption for the field of information systems. This project utilizes spatial analysis to examine both formal and informal systems operating in virtual space. She is also involved in a three-year project examining the declining participation of women in the area of information technology and the anomalies in skills being taught at universities and those required by industry. E-mail: A.Greenhill@hum.gu.edu.au