

Introduction: The Problematic of Information Technology and Organization

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It is said that we are living through an era in which organizations within industrialized societies are experiencing a prolific growth in the development and deployment of information and communications technologies. Across all sectors of the economy, both public and private, within and between organizational boundaries, computer-based information systems appear to be pervasive. Concomitantly, many observers and commentators have proclaimed the dawning of a new age—known variously as the information society, the information economy, or post-industrial society, and so on—in which society itself is on the verge of transformation through the use of information technology (IT).¹ However the claims surrounding the IT revolution—ranging from visions of technological utopia to dystopia—are evaluated, it is clear that this area merits critical attention.² The aim of this short introduction is to set out the starting-point for our PICT research on IT and organizations, and thus provide some of the background to the lines of argument developed in the later chapters.

In contrast to the surfeit of prophesies in the area, comparatively little effort has been expended in trying to understand how the discourse on organizations and IT operates. Yet all the attempts at analysis and prediction deploy tacit models and concepts of ‘technology’ and ‘organization’. Thus, an important assumption underpinning this book is that the critical study of the development and use of IT in organizations has to start with an examination of these background assumptions and theories which govern how the relationship between technology and organizations is construed. It has to consider, for example, how technology and organization are brought together theoretically while remaining distinct objects of analysis.

While we do indeed set out to study the role of IT in changes within complex organizations, we also try to understand the very terms within which debates about organizations and technology take place. Seeking a critical stance on management, organizations, and IT, and united by a broad emphasis on the constitutive role of social relations in the development of technology, we aim to explore the concepts and issues which underpin the projected benefits and problems

associated with IT; to define the various overlapping problematics which govern the questions we pose about it. As with many scientific and technological advances, developments in the area of IT and organization serve to provide a focus for debate in which a familiar stock of issues tend to be rehearsed (Bloomfield and Vurdubakis 1995). Thus questions regarding the proper place of technology in relation to society and social relationships, social order, control versus freedom, responsibility, and autonomy, and so on, are to be found in programmatic statements for, as well as reactions to, IT. Moreover it is interesting to note that despite the opposing stances of technological optimists and pessimists, they both tend to reproduce a technologically determinist problematic in which a limited set of alternatives are on offer: empowerment or managerial control; liberation through technology (e.g. the personal computer, the Internet), or domination by technology; competitiveness secured through technology or economic oblivion brought about by the failure to exploit technology. Either way then, whether for good or ill, IT is seen to be powerful, to have a transformative capacity, changing organizations and their members, societies, and communities. As a complement to this, organizations (as social entities) bear the burden of plasticity. In other words, organizations must adjust to the imperatives of technology.

The existence of this common ground beneath otherwise divergent views of IT underscores the need to examine closely the specific discursive resources through which its role in relation to organization, or society more generally, is articulated. For instance, claims about IT tend to emphasize either discontinuity—it will revolutionize everything (Kranzberg 1989)—or continuity—things will continue as before (Winner 1989). Thus, in contrast to the putative transformative character of IT, it may be pointed out that from an information perspective, one could regard a simple card index file as a form of information system; indeed one could go back through history and stress the importance of the development of writing, lists, and other inscription devices,³ and in particular their role in the exercise of power. Appeals to history—whether they stress continuity or discontinuity—reinforce particular representations and understandings of technology and its place in the world. They thereby constitute appropriate objects of enquiry: in the effort to understand how questions in the area are posed and answered (see Tribe 1981); and how, for instance, the claims within the discourse on IT and organization are indexed and sustained.

The glare associated with advanced computing and communications technologies lures us like moths to a light. The ubiquitous microchip and its ever-diminishing dimensions, coupled with increasing processing power and concomitant computational speeds, rapidly expanding storage devices, and all the other attendant gadgetry, are all too frequently the predominant foci of attention. Images of utopia or dystopia thereby loom large as we seek to make sense of this apparently awesome potential, and we lose sight of the crucial task of trying to ask the right research questions (Roszak 1988).

While much effort has been expended by geographers, policy analysts, economists, and others, in efforts to map and measure the emerging information economy, in our own research we have been interested in how it is that such approaches can be deemed as the way to study IT. Though useful for other purposes, mapping and measuring cannot assist us in a critical approach to information technology because in a sense they are simply further expressions of it. Indeed, mapping and measuring are not neutral or passive instruments which merely reflect the objects they are deployed to reveal: they are constitutive of them; they inscribe the world in a particular way. Thus it is at least as important to consider other aspects of IT, such as the question of what counts as information—and how this intersubjective agreement is achieved in practice in specific organizational settings—rather than just how much of *it* is in circulation.

Given the points raised above it is clear that the study of the development and role of information systems in organizations leads the researcher into encounters with some very difficult problems. Questions of epistemology, expertise, knowledge and power, of language and meaning, information and representation, objectivity/subjectivity and the philosophy of science and technology, the putative division between the technical and the social, to name but some, are deeply implicated in any serious study of how information systems are developed, marketed, and used in organizations. However this would not necessarily be apparent from a reading of the mainstream journals and texts which deal with the area of organizations and IT.⁴ In part this may be explained by the fact that as an academic field of investigation, information systems is a comparatively new area of endeavour reflecting a variety of influences and ideas. Amongst these one finds systems theory and cybernetics which share common roots in the very onset of the computer era; ideas on organizational design which are much influenced by socio-technical and contingency approaches to organizations; theories of decision-making; the study of accounting systems for enforcing responsibility and managerial control; and the plethora of systems development methodologies.

Though there is valuable critical work in the area (e.g. Kling 1996), in the main critical ideas have not entered the foreground of debate and remain effectively relegated to the margins of the subject—there is, for instance, no first rank critical journal in the area (unlike, for example, *Accounting, Organizations and Society* in the discipline of accounting).⁵ Often critical perspectives tend to be treated as sources of interesting ideas and insights but almost by definition are not seen as directly relevant to the practicalities of getting on with the building of *better* information systems in the here and now. In fact this state of affairs represents something of a paradox. The pragmatic approach to ‘getting on with using IT’ can be seen to be at odds with the revolutionary claims made on its behalf. For if the technology is really revolutionary then surely there is a need to step back from the fray a little and attempt to take a broader view of the field, to be more circumspect towards the question of how the technology should be developed and used. Indeed, this is not just an academic or philosophical point

for there is ample evidence that frequently the development and implementation of information systems can be extremely costly, at times going disastrously wrong (Dutton *et al.* 1995).

While the existing literature or approaches to IT and organizations formed part of the starting-point for our analysis, we also regard them as an integral part of the *wider* problematic of understanding information systems in organizations. In addition we also take into consideration changes within organization theory and social theorising more generally. For example, debates about power (Knights and Willmott 1985), post-modernism (Cooper and Burrell 1988), representation (Cooper 1992), textuality and grammatocentrism (Hoskin and Macve 1986), the social construction of technology (Bijker, Hughes, and Pinch 1987), and the actor-network (Latour 1987) approach in particular, are deemed pertinent to the research questions we seek to formulate—even if their precise relevance is not always readily apparent. Indeed, those debates and the different ontological, epistemological, methodological, and political commitments they bring to the surface, not to mention the disciplinary divisions, were re-enacted on numerous occasions in our own research centre during the conduct of the work reported here, as we struggled to bring a coherence to our various research activities and outputs.

Our aim in this volume is to avoid reducing the analytical focus to that associated with studies of the *impact* of technology on organizations.⁶ Technology for us is not a variable to be factored into the accounts of organizational change; rather the social content of any particular technological system has to be examined. Indeed, returning for a moment to the example of the print revolution it is useful to note the argument that the large-scale printing and dissemination of books not only presupposed a literate public but, more subtly, subjects who would read the texts in private (as opposed to out loud in public). This example in the history of technology is matched by developments currently under way in modern organizations—as we argue in later chapters of this volume, the provision of information systems presupposes users with information needs. Therefore the conceptual and social changes which construct users who have these information needs should be seen as a condition rather than a consequence of the use of IT. Expressed in the more conventional terms of technological innovation studies, the technological push of IT is matched by the demand pull arising from the momentum associated with the message of the IT revolution—whether this be to grasp a competitive advantage, seek to reduce uncertainty, or simply reproduce a desire to appear modern, up to date, or at the leading edge of technology. In this regard it is evident that the assorted gurus, consultants, and academic prophets of the IT revolution help to shape the substance, as well as the perception, of the changes they claim to report.

It is important to acknowledge the evolution which resulted in the perspectives identified above. At the outset, the PICT work within CROMTEC also embodied a particular interest in three interrelated concepts which have been much in vogue in management theory and practice during the 1980s and 1990s—namely, culture, control, and competition (Coombs *et al.* 1992). Each of these

had a theoretical as well as an empirical dimension in our research. More specifically, while these concepts provided a basis for theorizing about the changing inter- and intra-organizational relationships that were enabled, mediated, and reinforced by IT, they also formed increasingly compelling reference points within the recipes for, and accounts of, change articulated by management gurus and, increasingly, practitioners within organizations. For example, our interest in culture was tied to the necessity of appreciating the role of meaning and interpretation within organizational change. At the same time it was evident that what counts as ‘culture’ was continually being redefined within management/consultancy discourse such that it had become a *key factor* in change and regarded as something that could be subjected to management control and manipulation (Willmott 1993). In some of the chapters here it is clear that this conception of culture is viewed with some scepticism. Similarly, with control and competition we were interested in how these concepts were being redefined through the development of IT in and between organizations, and how they figured in the exercise of power and the reproduction of managerial identity.

This book presents some of the major themes which have been developed during our PICT research on the National Health Service, financial services, intermediary practices in the field of IT development and implementation, and new product development in the area of IT and mobile communications. As the output of a research centre which includes a variety of interests and academic disciplines, it inevitably contains a range of perspectives—in some places overlapping or perhaps even in contention in others. It is therefore not intended as a work of theoretical synthesis, nor does it attempt to summarize or represent all of the work carried out in our research centre under the auspices of PICT. However, there is an important connecting thread running through the book. All the chapters can be read as different approaches or answers to one central question—namely, the nature of the relationship between technology and organization. That is, each chapter represents a perspective on how the statement ‘technology and organization’ operates or may be construed. In ensemble then, the chapters make up a polyphony of arguments covering a range of problematics which have tended to dominate debate in social science, management, and organization theory on the role of IT in and between organizations. The book is organized into three parts according to the following concepts or themes: strategy and markets (Chapters 2–4); integrating technology and organization (Chapters 5–6); and networks (Chapters 7–8).

1.1 STRATEGIES AND MARKETS

Chapter 2 by David Knights, Faith Noble, and Hugh Willmott, presents a review of the academic literature on IT strategy. Conventionally, questions of IT strategy centre on the issue of how the appropriate *fit* between organizations and IT can be achieved. In other words, it reflects a concern with the establishment of proper

order between the two. This approach is critiqued in terms of its rationalist assumptions, and is contrasted with alternative political and critical approaches to the understanding of strategy which are then illustrated in the case of a financial services company. The chapter considers how as part of a discourse, the notion of an IT strategy can be understood as a resource which mediates the self-discipline of managers in their search for control and the security of identity.

Chapter 3 by David Knights and Fergus Murray also locates the organizational development of IT within a problematic of power and identity and the formulation of strategy. It explores the issue of expertise and the deployment of material and symbolic resources in the context of the managerial labour process in another financial services company. In this case however, the connection between technology and organization is examined in relation to the operation of the specific power/knowledge relationships constitutive of the associations between markets, organizational change, and technology, and which managers reproduce in the pursuit of their careers.

In Chapter 4, Dominic Wilson, Dale Littler, and Margaret Bruce consider the development of marketing strategies in areas of uncertain markets and rapid technological innovation. The thrust of their argument derives from the problems associated with the predominantly rationalist conception of strategy to be found in the marketing literature. In its place an alternative perspective is set out by drawing on the notions of organizational and sector paradigms. These represent social, cultural, and cognitive frameworks which both provide specific recipes for action but also constitute sources of inertia. The argument is developed through the presentation and interpretation of two case studies from the computer industry.

Together then, Chapters 2, 3, and 4 address the concept of strategy and the question of how to understand its operation within managerial practice. In addition, Chapters 3 and 4 consider the notion of markets and its specific relationship to strategy. Though informed by quite different theoretical perspectives both regard management's view of markets as being socially produced. Chapter 3 argues that markets are a rhetorical resource within managerial discourse—providing both a need for strategic thinking and a legitimation (or alternatively a critique) of existing strategic moves within an organization, while Chapter 4 sees managers' perspectives on markets as being shaped and filtered by prevailing organizational and sector paradigms.

1.2 INTEGRATING TECHNOLOGY AND ORGANIZATION

Chapter 5 by Brian Bloomfield and Theo Vurdubakis, explores what is represented by the word *and* when we speak of 'technology and organization' in the same breath. A specific focus is on the form of *intermediation* which constitutes the shape and substance of the relationship between the *two* object domains. To this end the chapter uses a case study of a proposal produced by a firm of

management consultants—in both authorizing and inaugurating a project to implement an information system at an NHS hospital as part of the national Resource Management Initiative. The argument considers how the specific discursive work carried out by the text—the inscribing/ordering/integrating on paper of technology and organization—paves the way for a particular configuration of technology and organization to be brought about, including the constitution of doctors and managers as users of IT with information needs.

Chapter 6 by Brian Bloomfield, Rod Coombs, Jenny Owen, and Paul Taylor retains the focus on resource management in the NHS. However in this instance the argument concerns the fate of this initiative—both in terms of IT systems and the emerging role of doctors in management—as a consequence of the introduction of the internal market in health care. The chapter considers the Resource Management Initiative and the setting up of a new organizational structure—clinical directorates—as two initially separate but increasingly overlapping and integrated networks. Moreover, it explores how the purpose of the IT systems and the understanding/organization of clinical directorates has effectively become translated owing to the machinations which are constitutive of the operation of the internal market. A particular focus is placed on business managers and the development of their role as, in effect, obligatory passage points between information/IT systems and practice within directorates.

The arguments in both Chapters 5 and 6 relate to the concept of integration between technology and organization. In the former, this issue is tackled in relation to the discursive integration of IT and organizational practice within the ‘paper world’ constructed by a consultancy report. In the latter, integration can be seen as a rhetorical device by which various groups in the NHS have understood, and sought to achieve, a practical connection between management and medical activity. In each case it would seem that integration was envisaged as something that would find its material expression in an information system which would enable a more efficient management of resources.

1.3 NETWORKS

Chapters 7 and 8 each consider the conditions, political issues, and rhetoric associated with the notion of networking. However, the first examines a particular instance of networking while the second investigates the articulation of the concept within recent developments in organization theory.

Chapter 7 by David Knights, Fergus Murray, and Hugh Willmott, presents a case study of a project to inaugurate an EDI system in the financial services industry. Here the actor-network approach is deployed to analyse the formation of this electronic network between a number of financial services companies, but this is tempered by a concern to ensure that in tackling the relationship between organization and technology the issue of power/knowledge remains firmly under the spotlight.

Finally, in Chapter 8, Fergus Murray and Hugh Willmott evaluate the role allocated to technology within current ideas on the development of new organizational forms—and in particular the notion of networked organizations. Critical of the hyperbole which has surrounded the notion of networking, and related initiatives such as business process re-engineering, the authors emphasize the importance of trust in the negotiation of working practices. They also stress that the problem of realizing the vision of networking is ultimately a political one, challenging the status quo which inheres in many present-day organizations.

NOTES

1. Rather than use the less common term ICT to refer to information and communication technology we will, in the main, use the prevalent term IT which is inclusive of communications technology.
2. For a useful overview of the range of perspectives from a now voluminous literature see, for example: Forester (1989). More detailed reviews of the literature are contained in the following chapters.
3. Of course though historical parallels can be informing they can also be misleading: the meaning of information now in the 1990s cannot necessarily be equated with the meaning of the things in the past which *we* might gather under the same heading.
4. Given our concern about what is included (and excluded) in mainstream accounts of IT and organization, it is appropriate to acknowledge some of the blind spots in our own work. For instance, the potential for IT to effect a compression of space and time as regards organizational operations, to enable the emergence of 'virtual' organizations, or the uses of virtual reality, and so on, do not form major foci of the arguments developed in this volume. Yet they are undoubtedly important in terms of the wider understanding of IT and organization. Indeed, some of these have been critically examined at the other PICT centres.
5. The critical journal *Accounting, Management and Information Technology* straddles the areas of accounting and information systems.
6. This is not, however, to deny that much useful work has been conducted under this label.

REFERENCES

- Bijker, W., Hughes, T., and Pinch, T. (1987) *The Social Construction of Technological Systems* (Cambridge, Mass.: MIT Press).
- Bloomfield, B. P., and Vurdubakis, T. (1995) 'Disrupted Boundaries: New Reproductive Technologies and the Language of Anxiety and Expectation', *Social Studies of Science*, 25(3): 533–51.

- Coombs, R., Knights, D., and Willmott, H. (1992) 'Culture, Control and Competition; Towards a Conceptual Framework for the Study of Information Technology in Organizations', *Organization Studies*, Vol. 13(1): 51–72.
- Cooper, R. (1992) 'Formal Organization as Representation: Remote Control, Displacement and Abbreviation', in M. Reed and M. Hughes (eds.), *Rethinking Organization: New Directions in Organization Theory and Analysis* (London: Sage), 254–72.
- and Burrell, G. (1988) 'Modernism, Postmodernism and Organizational Analyses: An Introduction', *Organizational Studies*, 9(1): 91–112.
- Dutton, W. H., MacKenzie, D., Shapiro, S., and Peltu, M. (1995) *Computer Power and Human Limits: Learning from IT and Telecommunication Disasters*, PICT Policy Research Paper No. 33.
- Forester, T. (ed.) (1989) *Computers in the Human Context* (Oxford: Basil Blackwell).
- Hoskin, K., and Macve, R. (1986) 'Accounting and the Examination: A Genealogy of Disciplinary Power', *Accounting, Organizations and Society*, 11(2): 105–36.
- Kling, R. (ed.) (1996) *Computerization and Controversy*, 2nd edn. (London: Academic Press Limited).
- Knights, D., and Willmott, H. (1985) 'The Theory and Practice of Power', *Sociological Review*, 33: 22–46.
- Kranzberg, M. (1989) 'The Information Age', in T. Forester (ed.) *Computers in the Human Context* (Oxford: Basil Blackwell), 19–32.
- Latour, B. (1987) *Science in Action* (Milton Keynes: Open University Press).
- Roszak, T. (1988) *The Cult of Information* (London: Paladin Books).
- Tribe, K. (1981) 'Industrialisation as a Historical Category', in *Genealogies of Capitalism* (London: Macmillan).
- Willmott, H. (1993) 'Strength is Ignorance; Slavery is Freedom: Managing Culture in Modern Organizations', *Journal of Management Studies*, 30(4), 515–52.
- Winner, L. (1989) 'Mythinformation in the High-tech Era', in T. Forester (ed.), *Computers in the Human Context* (Oxford: Basil Blackwell), 82–96.

