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3-15-2009

Thinking Informatically: Introductory Materials and Chapter One

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Thinking Informatically: Introductory Materials and Chapter One

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Abstract

Many of those who are active within the Academic field of IS are constantly seeking a firm disciplinary basis for their endeavours. In many respects such efforts are based upon a mistaken view of how disciplines are actually constituted, and the purposes that they serve. In many respects it would be far more fruitful if those working within the field of IS were to accept a more fluid and contingent notion of a discipline; simultaneously recognizing the contested nature of many of the core concepts - particularly information, communication, and technology. In so doing we will be Thinking Informatically.

Permanent URL: http://sprouts.aisnet.org/6-66

Reference: Bryant, A. (2006). "Thinking Informatically: Introductory Materials and Chapter One," Leeds Metropolitan University, UK . *Sprouts: Working Papers on Information Systems*, 6(66). http://sprouts.aisnet.org/6-66

THINKING INFORMATICALLY

INFORMATION,

COMMUNICATION AND

TECHNOLOGY

THINKING INFORMATICALLY

INFORMATION, COMMUNICATION AND TECHNOLOGY

ANTONY BRYANT

Thinking Informatically: Information, Communication and Technology

To quote from Tony Bryant's introduction, this book has nothing if not grandiose claims for the field of Information Systems. It is an "attempt to re-orient a discipline – perhaps more than one – by scrutinizing existing disciplinary claims and offering in their place a glimpse of a wider, richer but more inchoate series of staring points." Bryant reviews developments in a field that is marked by its terminological opacity. As he himself points out, the field is variously called: Management Information Systems, Information Systems and Information Management – to which one might Computer Information Systems, Informatics, Information Technology, Computer Studies, or some variation of the above. It is a field marked by spectacular growth, both in terms of technology that underpins much of it, and the reach, impact and implications of that technology.

Given this growth, and given the trans-disciplinary nature of the subject matter, it is perhaps no wonder that the field has been marked by controversy and crisis since its inception – in the form of business data processing – back in the 1950s and 1960s. Indeed, in this very year, we will see the publication of a collection of articles by leading academics arguing, at one extreme, that the field should revert to its IT and IS design focus, while others – like me – welcome the ever expanding reach of the field, to include societal and global issues.

An important point about Bryant's book is that it unpacks the concepts of information, communication and technology, rather than talking – as most do – about information and communication technologies. People inform themselves by making sense of data. People communicate. Technologies may facilitate communication across time and space, but they may just as easily facilitate miscommunication. Another real contribution in this age of memory loss and faddishness, is that it traces some of the key concepts of information back to the likes of Shannon, and it traces business computing back to the LEO computer – the first commercial application of what was then a new technology. This historical and conceptual context is what makes the book a real contribution to our understanding of the meta-discipline of Information Systems.

Robert D Galliers

Thinking Informatically: Information, Communication, and Technology is interesting because it approaches discussion of information, communication, and computer/communication technology in a different way. My review reflects both my career emphasis on technology-enabled systems in organizations and also my broad interest in the implications to society of information and communication technologies. I am been an active participant in the development of the academic field referred to with names such as MIS (Management Information Systems), IS (Information Systems), and ICT (Information and Communication Technologies). The computer and communications technology revolution of the past 50 years has clearly changed the way organizations communicate and perform activities. New and improved affordances and capabilities have been provided by computer and communications technology. Three concepts that are basic to understanding these affordances and capabilities in organizations are information, communications, and associated technology. My work has emphasized the changes that have occurred in organizations, but the impact of information and communication technologies are much broader. The concepts of information, communication, and technology affect us in our homes, in our communities, and in our societies.

Tony Bryant broadens the discourse about the information/communication revolution in our time to consider the information and communications technologies and their affordances, capabilities, and effects through the broad lens of sociology rather than the more narrow views of organizations or of technology. By breaking out of the limits of much of the past discussion, he introduces ideas that may be strange to technologists and information specialists in organizations. He relates the ideas of sociologists such as Bauman to the field of informatics. (He uses the term "informatics" to describe a broad field of study and application that extends beyond organizations). With this broad view, he raises issues, ideas, and speculations that are intriguing.

As I read the manuscript, I disagreed with some of his historical analysis and some of his characterizations of the state of the field. I questioned some of his leaps into the world of sociology. On the other hand, I found myself thinking new thoughts and considering different views. I became interested in topics such as the bias introduced by the conduit metaphor for communication and the effects of praxeomorphic thinking (ascribing the characteristics of technology to human beings) on our thinking and the way we think about and build systems. I was motivated to

ponder the disturbing societal and personal effects of "liquid modernity" dominated by software rather than solid, tangible objects. The book challenges everyone involved in the broad field to evaluate current thinking, consider new thoughts, and perhaps build a broader view for a field of academic research and teaching and change the approaches to practice.

Gordon B. Davis

Honeywell Professor of MIS, Emeritus

Carlson School of Management

University of Minnesota

PREFACE

I have just finished reading Antony Bryant's book. This remarkable study ends with an appeal: it is high time for 'the far-reaching scope of informatics', stifled as it has been thus far by a variety of self-imposed 'limiting concepts', to emerge 'in its own right' from its semi-tolerated hiding and/or semi-legal confinement 'within the IS academy'. High time, in other words, to acknowledge countless social connections – the roots as well as repercussions – of informatics; and to admit that the advent of informatics both reflects and prompts a chain of crucial social departures: and so it calls for a close scrutiny and radical revision of the ways we think of the world we inhabit - the world which we cannot but shape and re-shape through our interactions. This is the substance of the Author's message – and he makes a very strong case indeed for the message to be listened to and absorbed. Few readers of this book would doubt its soundness and urgency.

I said that I have just finished reading the book. This is not the whole truth, however. I'll surely return to it on many occasions, as it contains the richest source of knowledge I came across of the short, yet meandering and turbulent history of our collective understanding, struggling to catch up with the as yet untapped potential and probable though as yet unanticipated consequences of the information explosion.[1] His book will surely serve for many years as an essential reference – and not just for the experts in informatics, but any scholar keen to penetrate the secret of our still not fully understood world, that while being composed of purposeful human undertakings manages to behave after the pattern of purpose-less and motive-less nature. This book calling us to 'think informatically' is itself a treasure-house of information making such thinking conceivable – and promising to assist us in our efforts to re-assimilate and re-conquer the world drifting out of our collective control and individual comprehension.

What set Antony Bryant on his voyage of exploration and discovery was the conclusion he drew from the thorough and comprehensive discussion of the apparently easy to understand, perhaps even self-evident, concept of information.

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i Paul Virilio writes of the 'information bomb', whose power to change the rules of the survival game far transcends in his view the devastating might of the nuclear bombs.

This term, Bryant concluded, 'cannot be understood in the context of computer technology without an understanding of what is involved in *communication.*' 'Communication' being a profoundly inter-human affair, an integral aspect of human interaction. This finding suggests that the realm of computer technology is much too narrow a territory in which to seek (let alone to find) the meaning of 'information'; that sociology, as the study of human interaction, is not 'another approach' to the study of information, but its integral, undetachable part and indispensable condition of its success.

From the voyage now completed, Bryant is bringing home priceless trophies: strategic principles and precepts that are capable of making that success feasible. Like: 'We have to begin to understand the specific nature of the "biological, social, linguistic and cultural changes" to which our attention is drawn as the source, nature and limitations of technicism and the full extent and complexities of informatics become apparent'. Or: 'Information is not a "mystical fluid" distilled from the raw data: Communication is not a process of flow from active transmitter to passive receiver: Technology is not an off-limits, asocial form of magic that drives society along once it is widely used'. And finally: 'Informatics has a profound and promising basis, but only once each of the three terms' (information, communication and technology) is 'seen as essentially contested and profoundly social'.

Such assertions may sound heretical in a field serving thus far as a fertile plantation, and then a playground of updated versions of old fetishisms that used to alienate and reify, as a supra-human logics, what in its core is a perpetually innovative human action. The great merit of Bryant's argument is to show, and to demonstrate beyond reasonable doubt, that as long as they go on sounding heretical the chances of an informatics equal to its task are not encouraging, and the odds militating against its facing up to the challenges ahead are overwhelming.

How important it is to all of us, the academics as much as the intended beneficiaries of their studies, to listen carefully to Bryant's argument and to his call, we can gather from just one example: the potential impact of the 'internet fetishism' (an expression coined by Jodi Dean[2]) on contemporary political life, and particularly

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ii See her 'Communicative Capitalism: Circulation and the Foreclosure of Politics', in *Cultural Politics,* March 2005, pp. 51-73.

on democratic politics. The 'internet fetishism', in Dean's words, 'protects a fantasy of unity, wholeness or order, compensating in advance for their impossibility'. 'The technology acting in our stead actually enables us to remain politically passive … The "fix" lets us think that all we need is to universalize a particular technology, and then we will have a democratic or reconciled social order'. Theorizing of the internet as the new and improved form of politics, of world-wide-web surfing as a new and more effective form of political engagement, and of the accelerated connection to the internet and rising speed of surfing as advances in democracy, look suspiciously like ideological glosses on the ever more common life practices of the knowledge-class, and above all on their keen concern with an honourable discharge from the 'politics of the real'.

All the more resounding for that reason is Jodi Dean's blunt verdict that the present day communication technologies are 'profoundly depoliticizing‘, that 'communication functions fetishistically today as a disavowal of a more fundamental political disempowerment or castration', and that

> the technological fetish is "political"… enabling us to go about the rest of our lives relieved of the guilt that we might not be doing our part and secure in the belief that we are after all informed, engaged citizens… We don't have to assume political responsibility because…the technology is doing it for us… (It) lets us think that all we need is to universalize a particular technology and then we will have a democratic or reconciled social order.

Social realities of our time stand in stark opposition to the sanguine and cheerful portrait painted by the 'communication fetishists'. The powerful flow of information is not a confluence of the river of democracy, but an insatiable intake intercepting its contents and channelling them away into magnificently huge, yet stale and stagnant artificial lakes: The more powerful the flow, the greater the threat of the river-bed drying up.

The planetary servers store information, so that the new (increasingly global) liquid-modern culture can substitute forgetting for learning as its major driving force; and they suck in and store the imprints of dissent and protest, so that liquid-modern politics can roll on unaffected and unabated, substituting soundbites and photo opportunities for confrontation and argument. The currents flowing away from the

river are not easily reversed and returned to the riverbed: Bush and Blair could go to war under false pretences not for the *dearth* of websites calling their bluff.

As far as the 'real politics' is concerned, on its way towards electronic warehouses dissent is sterilized, defused and made irrelevant. Those who stir waters in the storage lakes may congratulate themselves for their fitness-testifying verve and sprightliness, yet those in the corridors of real power would hardly be forced to pay attention and could be only grateful for the state-of-the-art communication technology for siphoning off their potential troubles and dismantling the barricades erected on their way before such troubles had time to settle. Real politics and 'electronic politics' seem to run in opposite directions, and the distance between them seems to grow as the self-sufficiency of each benefits from the absence of the other's company. The age of simulacra did not cancel the difference between genuine stuff and its electronic equivalents/substitutes, between real and virtual realities; it only dug a precipice between them - virtually easy, but in reality increasingly difficult, to bridge.

This is but one example of the intense two-way traffic between the world and the 'world-wide web', which the emergent discipline of Informatics may ignore not only at its own peril, but to all our loss – the people simultaneously on the acting and the receiving side of the communicative revolution. It is but one of the numerous cases of misconceptions which a narrowly circumscribed and unduly tapered study of the forces behind that revolution and of its many impacts may produce; with grave consequences for the direction our shared life may take when equipped with the tools of electronic communication. Last though most certainly not least, it is but one example of the services which Antony Bryant's timely reminders, convincing arguments and perfectly aimed signposts may render, if given proper attention.

Zygmunt Bauman
Professor Emeritus University of Leeds
Leeds, October 2005

FOREWORD

The spread of computer and communication technologies (ICTs) over the past 50 years or so has been remarkable. They affect practically all aspects of our lives, enabling us to do things which in previous ages would have been unthinkable. They have become ubiquitous. Nevertheless their spread has been far from uniform, and the so called digital divide has become a significant problem and source for discussion. Nor are all the consequences from the deployment of ICT universally beneficial.

As might be expected the diffusion of such a significant technology has been paralleled by a growth in regarding the technology, its applications and impacts as a domain of study: at one level because of the need to teach those who work with ICT, but at another more profound level to try to understand the phenomenon in its societal context. In part, it is hoped this study will provide the methods which enable us to make the best possible use of the technology, in part to provide the criteria, practical as well ethical, on what constitutes 'best possible' use, and in part to be able to foresee the consequences on society, on organizations and on individuals of its pervasive spread.

Today this domain of study, under a variety of names, is one of the major divisions in the academic calendar in Universities and Business Schools. Its Journals and Conferences flourish. But it is a domain in crisis. Its legitimacy as a separate field of study has been questioned. Student recruitment in the developed world, after many years of sustained growth has fallen sharply. At the same time a divide has grown between practitioners and academic scholars. An ICT professional walking into a workshop on the role of the actant in Actor Network Theory or the importance of nomological nets would retreat in bewilderment.

Ever since the first schools were set up in academia in the middle and late 1960s scholars have discussed and debated the nature of their subject matter, its boundaries and its relationship with other established academic disciplines. What is clear is that whilst there was common ground on some of the issues that were to be studied, there was little consensus on either the main thrust or the appropriate research methods. The argument on where the studies should focus has divided the community

between those who would place the main emphasis on the technology, or the artefact as its advocates term it – the intensive definition[3] – as against those who make the information system itself in its wider context the focus – the extensive definition. A third school[4] considers that ICT studies need to focus on the work place.

As a response to the current crisis and attack on the domain from outside the debate has sharpened, bringing out much more clearly than before the epistemological and ontological assumptions underlying the differing outlooks of ICT scholars. But the debate has been carried out without acrimony and in the best spirit of academic endeavour.[5] Nevertheless much of the debate has a defensive tone - partly a debate amongst the community, but partly in defence against the critics from outside the community.

In this book Antony Bryant analyses the way the scholarly community has defined the subject matter. He concludes, following Zygmunt Bauman's analysis of another discipline, sociology, that the discourse on the discipline of Information Systems is flawed. Each element of the ICT triad: Information; Communication; Technology is examined in turn. The way the meaning of these words has evolved is traced, and the confusion and contradictions in definitions are exposed, and some of the myths and misunderstandings which have accumulated in the 50 year history of the domain highlighted.

As an example of myths, Bryant refers to Boland's characterisation (Boland, 1987) of five fantasies stemming from the way the information is thought of in the ICT community. To these we can add a sixth fantasy, the tacit and dangerous assumption underlying much of the discussion on information and knowledge management, that information as depicted in our systems represents the *truth*. The idea that information and knowledge may be manipulated in an instrumental way is

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i Land, F. F., 'The Information Systems Domain', in Galliers, R.D., (ed.), *Information Systems Research: Issues, Methods and Practical Guidelines* , Blackwell Scientific, Oxford, 1992

ii Alter, S., 'The Work System Method for Understanding Information Systems and Information System Research', *Communications of the AIS*, 9(6), pp. 90-104, September, 2002
iii King, J.S. and Lyytinen, K. (eds.), *Information Systems: The State of the Field*, Wiley, New York, to be published 2006

often forgotten, despite the evidence all around us of spin, propaganda, deceit and fraud.[6]

Bryant discusses the way the ICT community has attempted to define information and dismisses the naïve view that information is processed data. Another approach is not to regard information as a single concept but to classify information according to the intended purpose and properties of different information classes. Land and Kennedy-McGregor[7] distinguish between 'descriptive information' which attempts to provide an accurate and objective description of the real world of people, object, rules and norms; and 'statistical information' which also attempts to describe aspects of the real world, but relies on inferences from imperfect data or models the real world on assumptions of statistical behaviour. They term a third class 'evaluative information' which is more judgemental and subjective. An ICT makes use of each type of information, but often designers and users are unaware of the properties of the information in the system.

If the book ended with its discussion of the current debate and its analysis of the definition of each constituent of ICT it would make a valuable contribution to the debate. But the book goes beyond mere criticism of a flawed discipline. Antony Bryant is optimistic. From his analysis and drawing on a wide range of sources he concludes that we need to rethink where the discipline fits in, and by *thinking informatically* revitalise the domain, and its position in relation to related disciplines in the social sciences. He suggests that the discipline has a future as a central discipline amongst its peers.

This book is provocative and important. It is essential reading for scholars and students in the social sciences. It lifts discussions on the topic to a higher plane and provides the framework for a bright future.

Frank Land

Emeritus Professor in the Department of Information Systems

London School of Economics

October 2005

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iv Land, F.F., Nolas, M-S., Amjad, U.Q., 'Theoretical and Practical Aspects of Knowledge Management: Broadening the View', in Schwartz, D.G., (ed.), *Encyclopaedia on Knowledge Management*, Ideas Group, 2005

v Land, F.F. and Kennedy-McGregor, M., 'Information and Information Systems: Concepts and Perspectives', in Galliers, R.D. (ed.), *Information Analysis: Zelected Readings*, Addison Wesley, Sydney, 1987

INTRODUCTION

This is a book with grandiose claims: An attempt to re-orient a discipline – perhaps more than one – by scrutinizing existing disciplinary claims and offering in their place a glimpse of a wider, richer but more inchoate series of starting points. The embryonic discipline in question currently goes by a number of different names – management information systems [MIS][8], information systems [IS], information management [IM] are just three of the most widely used – and has been marked both by spectacular growth and continued crises of identity since its inception. The growth has been of three distinct kinds; growth in resources, growth in technological range and scope; growth in conceptual reach and ambit (see chapter 6). These three forms have led in different directions at different times since the 1950s, giving each specific era its own flavour of identity crisis; but there is a general similarity and continuity to these crises as will be explained in the chapters that follow.

At the heart of the discipline there lies the development of computer-based information systems [CBIS] beginning in the late 1950s. By the middle to late 1960s CBIS issues were sufficiently coherent in an academic sense that in the USA, under the rubric of MIS, there were academic appointments, specific under-graduate and post-graduate courses, and researchers in place. In North America MIS departments were mostly spawned within Business Schools, Departments of Management and the like. In many European countries the equivalent groups tended to emerge from within Computer Science Departments, and so from their very inception there was at least a dual character to IS/MIS.

In his recent contribution to a symposium for one of the founding figures of MIS, Mason (2005) traces the emergence of MIS in the US. He lays stress on the *systems* nature of the discipline, and argues that its emergence was impelled by a variety of influences from existing disciplines including management studies, operational research [OR], and systems analysis.

It is critical to note that all of these reference or bedrock disciplines predated the appearance of the commercial computer – but were indelibly marked by its

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1 This introduction uses several overlapping and competing terms – MIS, IS, IT, ICT etc. – the differences and similarities will be explored in detail in chapter 1.

emergence. So although many key issues in MIS were not novel to the field, they took on new meaning and consequence as a result of the appearance of commercial computing in the 1950s.

Although some texts inexplicably omit or ignore it, the first genuinely viable and effective commercial computer system was developed in the UK for J. Lyons & Co: LEO, the Lyons Electronic Office, in 1951. Mason uses 1954 as his 'pivotal year', with the installation of a UNIVAC machine to process payroll for General Electric. He also notes that the 1950s saw the formation of institutions oriented specifically to systems approaches; notably the Society for General Systems Research. The age of commercial computing gathered pace in line with a general tendency for technological acceleration and increasing complexity and inter-relatedness. As usual the hard, technical and operational reality was well in advance of conceptual and intellectual developments that might help in its understanding.

The period from the 1960s to the late 1970s witnessed the ways in which computers began to 'shock' the organization, as Gibson and Nolan pointed out in their work on technological maturity (see Nolan, 1982). In fact there was not a single, short-sharp-shock but rather a series of shocks as part of a process of profound change and disquiet as computer technology moved from highly specialized and somewhat constrained applications to far wider accessibility and implementability. Whatever the strengths and weaknesses of this particular concept of maturity, it did at least draw attention to the reality of technological innovation on a large scale as more than simply *plug-and-play*; or even plug-and-pay. Stafford Beer encapsulated both the challenge and the threat of the new context

> the question which asks how to use the computer in the enterprise, is, in short, the wrong question. A better formulation is to ask how the enterprise should be run given that computers exist. The best version of all is the question asking, *what, given computers, the enterprise now is*. (Beer, 1981, stress in original)

If early computer technology shocked the organization, the appearance of the PC shocked everyone, with further jolts and surprises from the internet, mobile communications and so on. Beer's challenge now has to be extended to reach beyond

organizational confines – so we might now state it in somewhat Yoda-like[9] terms as *what, given ICT, society now is?*

So whatever one's view of the actual nature of the changes from 1951 to 2001, after 50 years of the commercial computer age the field of studies focused on CBIS has to contend with a vast range of rapidly changing technologies and artefacts, and a widening impact of those technologies on an ever-increasing range of human social activities.

A key consequence of this has been that whatever constituted the field of MIS or IS, many parts of it are now up for grabs by sociologists, psychologists, cultural theorists, economists, and virtually anyone who has a claim to be responding to the question *what, given ICT, society now is?* Certainly the technical issues remain important, but relative to social and cultural aspects of ICT they are taking a diminished role.

Consequently by the early years of the 21st century we are witnessing the end of the spectacular growth of MIS/IS as an academic field. The identity crisis that has been ever present since the 1950s can no longer be attributed to adolescence and a growth spurt. It may well be that we are in danger of passing straight through to senility and obsolescence. The crisis of identity is acute as the gee-whiz factor disappears; or is taken up elsewhere, or becomes a generic social feature (see chapter 5). The decline also has an impact on funding. In the UK for instance computer-related undergraduate courses now attract the same level of government support per student as do other undergraduate courses, whereas previously the former had attracted a premium of around 50%. In part this is justified on the basis that all students now use and require computer support.

This is exacerbated as the impact of out-sourcing, off-shoring and general familiarity with the technology undermines the market power of IS/IT graduates, which reduces the demand for such courses, with ramifications for the status and employability of orthodox-MIS academics. Just as we marvel at the paucity of the

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2 Yoda being the sagacious Jedi Master from *Start Wars* whose wisdom does not extend to following generally accepted sentence construction – see http://en.wikipedia.org/wiki/Yoda

$3000 PC of the early 1980s compared to what is now readily available for half that figure – and a fractional amount in real terms; so too organizations and people are re-evaluating what they are prepared to pay for basic IT skills, and wondering why they ever needed to pay so much for so little only 10-15 years previously.

The message at the heart of what follows is that if MIS – well actually informatics (see chapter 1) – is to avoid the leap from adolescence directly to senility then we must make a start on the project of re-orienting ourselves. Mason argues that a 'loosely knit field of inquiry becomes a tightly woven discipline when it acquires four things'; one of the four is 'theories and concepts'. One of the problems with MIS as it currently exists is that its central concepts are themselves in need of clarification and remedy, both in the light of changes in the entire context of the field and weaknesses in the concepts themselves. The chapters that follow offer a starting point for this, and seek to justify and motivate a new collective conceptual and intellectual project termed *informatics*. This will require a deep and critical analysis of three core and defining concepts; *information* (chapter 2), *communication*(s) (chapter 3) and *technology* (chapter 4). It will also demand an engagement with other disciplines, and an enhanced understanding of the economic, social and environmental context of the 21st century (chapter 5). The move will result in a wider, less cohesive but more challenging and encompassing discipline of informatics.

This project is not new in itself. As long ago as 1987 Boland argued that the central concept of MIS – information – remains elusive, and that 'we as researchers have failed to address the essence of information in our work'. He highlighted what he termed the five *information fantasies* – pointing out that fantasies 'have two faces: a productively imaginative one, and an erroneous, self-deluding one' (1987, p367). Unfortunately, as Boland acknowledged in 1987, the first face has proved considerably weaker than the second; an imbalance that has if anything got even more marked in the last 20 years. With reference to the five fantasies, ICT is seen to focus around (1) structured, disembodied data; (2) managed in a narrowly defined rationalist manner in hierarchical, command-and-control organizations; (3) with little attention paid to issues of power and difference; (4) with a view of intelligence that ignores its creative, interpretive nature; (5) and where *more* information is automatically assumed to mean *better*, with an ultimate aim of perfect information.

What is required is that we challenge each and every one of these five, and that we also extend this scrutiny to the concepts of *communication(s)* and *technology*.

Bauman (Bauman & May, 2001) has called for us to start *Thinking Sociologically*, and I wish to supplement and extend this with an exhortation to start *thinking informatically*. Haraway (1985) has offered a definition of informatics as the 'technologies of information as well as the biological, social, linguistic and cultural changes that initiate, accompany and complicate their development'. I will argue that this needs a slight revision to include 'technologies of information and communication'; and that we can then develop a way of thinking that seeks to understand these technologies and their ramifications, and that also 'opens up the possibility for thinking about the world in different ways' (Bauman & May, 2001, p5).

Again paraphrasing Beer's position; the question which asks 'what is MIS?' is, in short, the wrong question. A better formulation is to ask how MIS needs to be changed given the current social and technological context. The best version of all is the question asking, *what, given ICT, **informatics** now is?* And in what follows I hope to be able to offer a persuasive argument for devoting our energies to *thinking informatically*.

PART ONE
INFORMATICS

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CHAPTER 1
THINKING INFORMATICALLY

'Only a discipline flawed as a discourse has to offer an apology, feels the need to justify its right to exist. … Concern with self-justification has been, since the beginning, a conspicuous feature of *infological* discourse.' (Bauman, 1992, p76)

The original version of this quote uses the word *sociological* rather than the ugly but evocative term *infological*. The ideas that Bauman expresses and the argument he develops are, however, at least as appropriate and useful when applied to the *infological* context as they are to the sociological. Before proceeding to justify this claim, the use of the term *infological* needs some explanation; which will lead to its replacement by a less uncomfortable one.

Imagine the scene in a surreal edition of *Who Wants to Be a Millionaire?* The hapless contestant is faced with the question – 'What is the correct term for the study of the use and application of information and communication technologies?' – Is it a) Information Systems[10]; b) Information Management; c) Information Technology; or d) Informatics?

If the contestant wishes to *phone a friend*, who will be chosen? Will it be someone from a university that offers a programme in Information Technology, or where the faculty or school itself is called Information Technology? Or will it be someone from a different university that has opted for Information Systems or Information Management for broadly identical entities? What if they phone someone conversant with the work of Donna Haraway (1985) who defines informatics as the 'technologies of information as well as the biological, social, linguistic and cultural changes that initiate, accompany and complicate their development'? Unlike the

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3 I have opted for the term IS as opposed to MIS – Management Information Systems; the latter prevails in North America. The two are largely synonymous, although MIS might be seen as subset of IS since the latter has a broader compass. However, as will be seen later, the two share some crucial ambiguities.

world of quiz programmes, there is no correct answer. We can either tender our own suggestion or make a choice from those on offer, although we do not do so in conditions of our own choosing.

The choice made here is the term defined by Haraway, but amended to read as follows; the study of 'technologies of information *and communication* as well as the biological, social, linguistic and cultural changes that initiate, accompany and complicate their development'. What follows can be seen as the extended justification for this choice.

There may be some objection to the term *informatics*. It is something of a clumsy neologism, like sociology, but the alternatives are riddled with ambiguity and are even more objectionable and conceptually far less robust. *Information technology* [IT] simply will not do, although it is probably the most commonly used term amongst non-specialists. But IT is both conceptually and linguistically problematic. Linguistically information *technology* is bound up with the hardware, and perhaps with the software – what some highly influential writers have termed the 'IT artifact' (Orlikowski & Iacono, 2001); but that is where it begins and ends. This might be seen as a sufficient and satisfactory constraint and foundation. Indeed a recent paper in the house journal of the gatekeepers of the discipline, *MIS Quarterly*, specifically argued that the discipline has to develop a clearly identifiable core, explicitly avoiding what the authors term errors of *inclusion* and *exclusion* (Benbasat & Zmud, 2003). (The authors of the article were concerned with what they term the *IS* discipline – but this confusion of terms will be dealt with below.)

Even if IT is expanded into **ICT** [*C*ommunications] this is still to remain within the realm of the actual artefacts, the things you can kick, rather than the sorts of concern that Haraway draws to our attention with her definition. Moreover the use of IT or ICT to refer to the *study* of the technology, rather than the technology itself, is to add to the confusion. It might be pointed out that use of the term *History* suffers from the same ambiguity, although the context usually resolves this; but there might be contexts in which 'The End of History' is a threat to people's academic jobs rather than a provocative title for a book or article.[11] Historians and others seem reconciled

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4 At the time of first writing this section, the UK Secretary of State for Education – Charles Clarke – was embroiled in a controversy over his remarks which could be seen to be the start of just such a policy; and in UK universities the 'end of chemistry' is also potentially on the agenda.

or oblivious to this potential ambiguity. For a newly emerging discipline such uncertainty is debilitating: So much for IT/ICT.

Information Systems [IS] is perhaps a better candidate, although there is still the problem of confusing the process of study with the object of study – a criticism which applies equally to MIS, the preferred acronym in North America. The recent document outlining the curriculum for undergraduate degree programs in IS perpetuates this confusion since it offers guidelines for the curriculum aimed at students 'majoring in information systems' (i.e. the process of study), but also states that 'Information Systems are complex systems' (i.e. the object of study).

Markus (1999) has suggested using the term *Academic* IS in referring to the discipline. In this way the academic field of study 'is clearly differentiated [both] from the subject of the study and from the functional unit in computer-using organizations'. This seeks to distinguish between not two but three concepts, since there is now the further distinction between the object of study (the information system in general) and the functional unit (the component or characteristic of an organization). These latter two can be confused because the term IS can be understood to refer to the generic topic, concerned with the ways in which technologies centring on communication and sharing of information can be developed and utilized effectively in various – predominantly organizational – contexts; and also to refer to the unit within an organization that is responsible for the development, maintenance and availability of those technologies and infrastructures. In most contexts this distinction is not problematic, although in universities it is always likely to be a source of confusion. If someone works in 'Information Systems' in a university are they primarily involved in teaching students, or in running the university's information system?

In contrast to both of these, Markus wants to stress that her concern is the academic discipline, including the study of both the generic subject and the specific functional context. So for IS, just as with the term IT, there is the need to uncouple the processes of analysis and study from the subject or focus of this analysis. Failure to do this simply adds a further source of confusion to an already bemusing domain of over-lapping acronyms – IT, IS, ICT; and contested terms such as *information*,

technology, *communication*.[12]   Unfortunately the term *Academic IS* is somewhat cumbersome, and the term IS is all too easily confused with IT. Markus' argument, however, is well founded, even if the net result of Markus' argument is not satisfactory. Indeed Markus demonstrates this same confusion and simultaneously undermines her earlier argument in concluding her essay with a plea for a new start 'so that we can create the IT (sic) field of the future!' (p202).[13]

The recent report detailing ideas for 'A Framework for Information System Concepts' [FRISCO] opens with the statement

> When talking about the information system area, different people may have different views about how broad or narrow this area is, and which other scientific disciplines are related to this area, and in which way.
>
> Even the term 'information system' itself is interpreted quite differently by different groups of people.   It seems to be interpreted in at least three different ways:
>
> As a technical system, implemented with computer and telecommunications technology.
>
> As a social system, such as an organisation[14] in connection with its information needs.
>
> As a conceptual system (i.e. an abstraction of either of the above).
>
> (Extract from FRISCO report, 2001 revised edition, section 1.1 – including the footnote below relating to the definition of 'organization'.)

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5 See chapters 2-4

6 The term Academic IS might itself be misunderstood and thought to apply to the functional unit within universities – so there is further reason to drop the term altogether; although it will be used in a different context in chapter 6.

7 The term 'organisation' is used here and throughout the report in the most general sense. Not only large companies are meant. One-man companies, profit- and non-profit-oriented organisations, clusters of companies interacting in some way, universities and research institutes are meant as well. Even the community of all Internet users and similar communities may be considered organisations.

The FRISCO authors do not explain who these 'different groups' might be; but the clear point is that the term itself is problematic and open to wide and inconsistent misinterpretation. Again our hypothetical quiz contestant would receive an unhelpful response if he chose to *ask the audience* made up of representatives of the different groups identified above.

What about the term Information Management [IM]? This is a far more useful and inclusive term since it represents a move away from a focus on the technology – **IT**/**ICT** – towards a concern with the information itself. (This is not to argue for a complete decoupling of IT from IM.) This is somewhat akin to the distinction between automotive engineering and transport management. The former is far more seductive, with an array of glossy monthly magazines devoted to the latest developments in cars, bikes etc. – but ultimately if people are going to be able to use these machines there has to be some analysis and management of traffic, transport policies, infrastructure and so on. Similarly with IT/ICT, again there are the glossy monthlies, but there also has to be the study of how everything fits together and actually works on a practical basis and in a sustained and robust manner. This is not to argue that technical and engineering issues are not important or profound, but it is to point to a range of key issues beyond the distinctly technically-focused ones. In this regard IM is a useful term, but it still does not provide the breadth and depth that is required; it is best used as the term that refers to the practice of managing information, as opposed to managing the information technology, and so it is necessarily narrower and more sharply focused than any concept that should refer to the more disparate field of study.

Thus with some considerable authorial sleight of hand, we are left with *informatics*. Perhaps a somewhat unwieldy term, but one that does allow us to distinguish between the study and the object(s) of study; and one that, using and revising Haraway's definition, clearly encompasses a full and wide area of concern. Furthermore the word itself, although seemingly originating in English, actually has a wider resonance in other languages.[15]

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8 Thus French, German, and Italian/Spanish all have equivalent terms – respectively *informatique*, *informatik*, *informatica*. Portuguese and Korean use the term informatics, and Chinese and Japanese also have an equivalent word. The specific meaning of the term in different languages will almost certainly not align with the definition argued for here. Moreover to add to the confusion, current usage in both English and French sometimes equates informatics with computer science.

So the case can be made for the use of the term *informatics* – even though it clearly leads to Benbasat & Zmud's *errors of inclusion* (see below). Yet even those who might object to the term itself would probably agree with the characterization of what it means. Certainly if the term is to be anything more than a convenient label it must have a more substantive set of claims. Before developing these, however, we need to establish the opening point that informatics is, in Bauman's terms, a discipline that is 'flawed as a discourse'.

To paraphrase Bauman yet again, it can be argued that informatics discourse was 'brought into being by the encounter between the awesome task of the management of organizational processes on a grand, *corporate and* societal scale and the ambitions of the modern state *and corporation*' (original – applied to sociological discourse – some terms added in italics – Bauman, 1992, p76).

Bauman notes that the outcome of this encounter between management and social ambition was the articulation of a 'collection of engineering *problems*'. In similar fashion, and in part deriving from the same impetus, the technology and its accompanying conceptual apparatus arrived as a set of engineered solutions. This reinforces the point made by Weizenbaum amongst others, who have argued that information technology came 'ready made' into the context that demanded its use; 'the remaking of the world in the image of the computer started long before there were any electronic computers' (Weizenbaum, 1984).

But this is not the feature that makes informatics into a flawed discourse. The problem arises because informatics, or whatever label is applied, has no autonomy from other discourses; and in this sense it is similar to sociology. Drawing on the work of Foucault, Bauman demonstrates that disciplines cannot be defined in terms of what might appear to be the 'obvious' aspects such as 'permanence of a thematic' or 'a well-defined alphabet of notions'; but, following Foucault, must be seen as *discursive formations*.

> 'We sought the unity of discourse in the objects themselves, in their distribution, in the interplay of their differences, in their proximity or distance – in short, in what is given to the speaking subject; and in the end, we are sent back to a setting-up of relations that characterizes discursive practice itself; and what we discover is neither a configuration, nor a form,

but a group of *rules* that are immanent in a practice' – Foucault quoted in Bauman, 1992, p69

From this perspective any discipline must be seen to constitute its topic and its practices. As Bauman argues it is not a case of reality waiting to be portrayed by 'its court painter'. In other words there is no pre-existing corner of reality waiting to be claimed and explained by a specific discipline; nor is the discursive formation a 'disturbing element' which superimposes itself upon some 'pure, neutral, atemporal, silent form'. The 'incessant activity of discourse … spawns the narrated reality at one end and the narrating reason at the other' (Bauman, 1992, p70).

Furthermore this 'narrating' is not something that can be ascribed to specific individuals but has to be located and grounded within institutional sites 'from which this discourse derives its legitimate source and point of application' (quoted in Bauman, 1992, p70). Foucault makes the point very explicitly with reference to insanity, psychopathology and medicine. Thus the institutional sites from which medical expertise is dispensed, from which it 'derives its legitimate source and point of application' (quoted in Bauman, 1992, p51), are those associated with hospitals and the generic medical infrastructure. Similar institutional issues apply to the IS discipline as it currently exists; and the prime dispensaries include, but are not restricted to, institutions such as *MIS Quarterly* [*MISQ*], *IS Research* [*ISR*] and the Association for Information Systems – all predominantly albeit not exclusively North American.

It must be noted that although I have argued for the term *informatics* as the most appropriate for 'the study of the use and application of information and communication technologies', I am not denying the existence of a 'discipline' best referred to as IS (despite the points made earlier about the actual confusion of the term IS itself). This 'established' discipline can be seen to exist in Bauman's terms as a 'flawed discourse' continually seeking to spawn a narrated reality and to articulate a narrating reason. For the remainder of this discussion I shall continue to use the term IS to refer to this disciplinary formation, contrasting it with the more tenuous – but conceptually more profound – disciplinary claims for informatics. The relationship between the two might best be envisaged as one whereby the more long-lived and established – but constrained – IS is gradually spawning a more far-reaching and

intense informatics; which ultimately must seek to encourage and promote similar tendencies in other disciplines.

A discipline may be announced with all manner of fanfare and flourish, and may even be instigated in some institutional fashion; but for any discipline to claim and sustain its own identity it has to establish and maintain its autonomy with regard to other discourses – drawing and defending its boundaries. In this respect disciplines vary in their ability and propensity to maintain their distinctive character and boundaries. For many esoteric sciences this is not a primary issue since the boundary may be widely, if sometimes grudgingly, acknowledged.[16] Bauman points to physics as a discipline where such self-delineation is exemplified; although he also uses the example of political statements under totalitarian regimes as another –

> … non-specialists would not challenge the statements of the physicists for lack of access to the events which they narrate; the subjects of an authoritarian government would not contest political pronunciations for lack of access to data guarded by official secrets acts. (Bauman, 1992, p72)

He adds that in most cases 'the two factors intertwine'; echoing the ideas of Feyerabend (1993) who likened the operation of scientific disciplines to organized crime gangs. And there is also a resonance with Foucault's concept of a discipline – knowledge conjoined with power – incorporating both the concept of a branch of learning and a form of control and punishment with various sanctions against non-compliance.

Furthermore disciplines such as physics and astronomy share a monopoly not only of experiences but also of equipment – usually expensive and complicated. As such, scrutiny of their findings can only easily be carried out by others equally immersed in the discipline, and with similar access to the means to investigate.

But this is a privileged position for any discipline, and one not enjoyed by sociology, which cannot stake any monopolistic claim to 'objects and events already construed and pre-interpreted within other social discourses'. Indeed Bauman argues

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9 In fact acknowledgement of boundaries does not usually have to be 'wide', but does have to be clearly acknowledged by those other disciplines most closely related. This is a particular problem for informatics. There is no corner of a foreign field that is forever informatics!

that sociologists cannot even claim superiority in such interpretations, since we, as social actors and observers, all have access to precisely the 'objects and events' at the centre of sociological analysis.

The IS discipline as it now exists exemplifies Bauman's and Foucault's observations regarding the nature of such discursive formations and their potential crises of identity and imperfections as a discourse. There has been an incessant stream of articles, books, conferences and so on focusing on the *identity* of the discipline. There are endless boundary disputes over endless boundaries, and even fundamental concepts such as *information* are lacking in any consensual definition. In addition, the ubiquity of the technology has resulted in extensive familiarization both in an everyday manner and on the part of rival disciplines; so that increasingly any claims to specialism and superiority on the part of those at the centre of the discipline, or who consider themselves to be so located, are open to challenge or undermined completely. Technology is truly quotidian.

Demonstrating Bauman's point about a flawed discourse having to offer an apology for its identity and existence, the principal institutional centres of existing IS have continued to wrestle with the issues of identity and demarcation. The key institutional sites 'from which this discourse derives its legitimate source and point of application' are fairly easily identified – even if there is considerable debate about the meaning of their pronouncements. The two key journals are *MIS Quarterly* and *IS Research*. *MISQ* has repeatedly engaged with the issue of the identity of IS, and its relationship to other disciplines; and the 2003 edition of the *Communications of the Association of Information Systems* (*CAIS*) contained more than a dozen articles on the topic; many in response to Benbasat & Zmud.

The *MISQ* 2003 issue featured an article by Benbasat & Zmud (2003) – both senior figures within the institutional sites of IS, and both past editors of *MISQ*. They argue that the IS scholarly community has, from its emergence in the 1970s, sought to 'develop a meaningful, resilient identity within the institutions that comprise its organizational field – namely the organizational science and information science research communities, business and information science academic institutions, and the various organizations, industries, and professional groups that comprise the information technology (IT) industry.' Acknowledging that after 30 years 'insufficient progress has been made', the authors are keen to provide a basis upon which a meaningful, resilient identity can be built.

They begin, promisingly if confusingly, by characterizing IS scholars as 'a community of nascent entrepreneurs attempting to create a new population, i.e., the IS discipline'. This appears to echo Foucault's idea of a socially mediated discourse or discursive practice; but why the use of the term 'population' rather than 'institution'? (And why use the term *entrepreneurs*?) This is made immediately apparent since the authors have derived the term from the work of Aldrich who was writing about *organizational* development; where the idea of an organization as a population seems appropriate. Aldrich grounds this process of creation of a new population in two forms of legitimacy – 'cognitive' and 'sociopolitical'. The latter bears some resemblance to the issues elucidated far more provocatively and imaginatively by Bauman, following Foucault, since it refers to 'acceptance by key stakeholders, the general public, key opinion leaders, and government officials of a new venture as appropriate and right'. But this is of only minor concern to Benbasat & Zmud; they are far more worried about cognitive legitimacy – leading to 'acceptance of a new kind of venture as a *taken for granted* feature in the environment' (stress in quote as it appears in Benbasat & Zmud, 2003).

They assert that 'the IS discipline has made significant progress' with respect to 'sociopolitical' legitimacy,

> as seen via the institutionalization of IT as an integral part of today's organizational and economic contexts, the acknowledgement of the importance of IS by academic accreditation bodies, the presence of IS academic departments and the degree programs …, a professional society (Association for Information Systems) …, and the aforementioned respect afforded to *MIS Quarterly* and *Information Systems Research*.

But for Benbasat & Zmud this is not sufficient, they yearn for cognitive legitimacy and conceptual unanimity; precisely the unity of discourse based on a 'well-defined alphabet' or 'permanence of a thematic' that Foucault and Bauman characterize as an elusive and impossible objective. Benbasat & Zmud specifically state that their aim is to articulate 'An Identity for the IS Discipline'. Almost as if they have read Bauman, and are seeking to offer a mirror image of his argument, they claim that a 'natural ensemble of entities, structures, and processes does exist that serves to bind together the IS subdisciplines and to communicate the distinctive nature

of the IS discipline to those in its organizational field – the IT artifact and its *immediate* nomological net.' (stress in original).[17]

Since no specific definition is offered of the term *nomological net*, it must be assumed that it is largely another way of stating that the IT artefact exists, and so too does this 'natural ensemble of entities'. What comprises this ensemble is indicated in a diagram with accompanying text. The authors explain that their view of what constitutes the approved and legitimate purview of IS consists of striving to understand

> (1) how IT artifacts[18] are conceived, constructed, and implemented, (2) how IT artifacts are used, supported, and evolved, and (3) how IT artifacts impact (and are impacted by) the contexts in which they are embedded

This seems at least minimally in keeping with our amended characterization of informatics; but Benbasat & Zmud clearly wish to constrain the interpretation of their set of core properties to a 'managerial, methodological' view of the world. Thus they stress that the nomological net is to be thrown around only those constructs that are '*intimately* related to the IT artifact'. To clarify this view they point to what they term *errors of inclusion* and *errors of exclusion* with regard to articles that have been previously published in *MISQ*. Their main reason for doing so is that such errors lead to ambiguity in the 'boundaries of IS scholarship'. Their tacit, but clear message is that flagship publications such as *MISQ* should be the site of unambiguous delineation of the discipline's identity and reinforcement of the discipline's boundary.

In offering this view of the discipline and its governance, Benbasat & Zmud are continuing a discussion that has beset IS since its inception, but which has grown in intensity particularly in the US in the past few years as the existence and budgets for IS departments in universities have come under attack.

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10 The fascination with 'The IT artifact' can be traced back to a key article by Orlikowski & Iacono (2001) in the other house journal of the IS gate-keepers – *IS Research*. It should be noted that although the phrase seems redolent of those who always want to stay conceptually close to the stuff you can kick, raising the issue of the IT artefact is an attempt to get researchers to 'take technology seriously'. On the other hand this topic has taken a new turn with the paper by Carr (2003) the editor of *Harvard Business Review* in May 2003, provocatively entitled 'IT Doesn't Matter'.

11 Where the word is used within a quote from elsewhere, the original US spelling of artefact has been retained.

However much IS-purists such as Benbasat & Zmud might try to defend some mythic *core* of the discipline[19], there is a necessary and inevitable engagement with a whole variety of other disciplines, which leads to profound problems of identity and demarcation. IS is a 'flawed discourse'. The boundaries between it and other discourses are fuzzy – indistinct to the point of disappearance; and the topics at the centre of the discourse are claimed not only by other discourses but by everyday 'commonsense'. Indeed, with the ubiquity of the technology and the terminology, these claims have actually increased to the extent that in 1999 Markus could ask 'What Happens if the IS Field as We Know it Goes Away?'

Markus was not arguing that the field will actually disappear in the sense that 'Horse & Buggy' studies might have disappeared – or certainly declined – had it ever existed in the 19th century academy. On the contrary, the threat is not one of disappearance but of dissipation and dissolution. 'As computers increasingly become embedded in every aspect of personal and organizational life, it is less and less possible to distinguish between computing and *everything else*.' (1999, p176) The unthinkable, as Markus puts it, is that the IS disciplinary turf will be cut up and hauled away by a host of other disciplines. 'We bemoan the fact that intellectual communities like organizational behaviour, operations management, and marketing are *discovering* information technology (IT) as an important topic for *their* teaching and research. … we see them as laying claim to research domains that we think of as ours.' (1999, p175). (At this point I leave it to the reader to decide who is included in and excluded from the 'we', 'ours', and 'them' to which Markus refers.)

Her evidence to support the claim for endangerment of Academic IS is that – at least in the USA – resources aimed specifically at Academic IS are under effective attack from other parts of the academy. Significantly fewer posts are being allocated to this domain, the justification being that the same requirements can be met with hiring 'IT-knowledgeable non-IS faculty'. This trend might be reversed if there is a large and continuing demand for Academic IS itself – but that begs the question of what constitutes the domain as such. In order to answer this question Markus develops her argument initially by examining the ramifications of a customer-based justification for Academic IS. Thus, like Benbasat & Zmud, Markus is arguing from

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12 Although for them it is not a mythic core, but a very real one.

an embattled position that aims to defend the disciplinary turf of IS from a range of predators in rival areas. This is not just a conceptual issue, it relates to jobs, budgets, research grants and other concerns understandably close to the heart of all academics.

The customer-based argument uses the parlance and procedures of business planning and applies them to the academic endeavour, in order to identify 'the *customer* and the *core mission* of Academic IS teaching, research and practice' (1999, p178). Markus notes that the general assumption has been that the key customers are 'organizations that use computers', but this is problematic or certainly too simplistic since it fails to differentiate between *user*-organizations (i.e. where IT/IS products and services are consumed) and *producer*-organizations (i.e. where IT/IS products and services are developed to be sold on to others) – the latter growing in importance as outsourcing has developed and grown more pervasive.

In order to develop her argument Markus attempts to clarify the mission of Academic IS, not a simple task since it is built upon such disparate foundations. Thus those who would characterize the mission as developing 'useful computing applications (software) efficiently and effectively' (quoted by Markus, 1999, p179), offer far too dated and limited a view; while those who consider aspects such as management,[20] rather than technical development can find themselves having to fight their corner against the technical people on one side and the business and management specialists on the other. (It should not come as a surprise that there seems to be no clear way of making a mission statement, since apart from *The Starship Enterprise*, when did mission statements ever make much sense?)

Markus' response to this doubly unsatisfactory, but perhaps largely self-inflicted, state of affairs is to widen the scope of Academic IS considerably, both in terms of customers and mission. In order to overcome any disagreeable implications of her argument, which seems to be leading to a product without a unique selling point, she offers an alternative view of Academic IS as the 'electronic integration of socio-economic activity'[21]. With tongue firmly in cheek, she adds her 'personal contribution to the terminological turmoil', expanding IT as '*Integration Teknowledgy*, where *integration* is shorthand for *electronic integration of socio-*

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13 Whether this is management of IT, IS or Information is not stated.

14 Hardly the slogan for an effective marketing campaign.

economic activity and *teknowledgy* is my term for *knowledge and skill in the area of electronic content, information, communication, technologies and systems*' (1999, p197). Although falling short, this does seem to be heading in the direction of Haraway. Unfortunately, however, Markus leaves her readers with a perplexing coda, since she concludes by calling for jettisoning the Academic IS field of the past 'so that we can create the IT (sic) field of the future!' – the slogan severely underselling the product.

This undermines the whole tenor of her argument about the distinction between IT, IS, Academic IS and the like; simultaneously committing the error of *inclusion*. Her six forms of integration seem to cover a vast range of issues, crossing into other disciplines and simultaneously blurring the boundaries between them. Again we have an indication that here is a flawed discipline, constantly needing to justify its existence, with indistinct boundaries that are unrecognized and challenged by rivals, and with central 'objects and events already construed and pre-interpreted within other social discourses'. Both Benbasat & Zmud, in a fairly positive tone, and Markus, with a potentially pessimistic one, are responding to a perpetual crisis of identity.

Following the logic of Bauman's argument, there is no reason to suppose that the stream of writing that tackles the identity issue for IS will come to some definitive halt. The editor of the *MISQ* issue in which Benbasat & Zmud's article appeared noted that 'I doubt that we will ever achieve unanimity within the information systems discipline about whether we have a serious identity problem within the discipline.' This might look like something akin to a couple arguing over whether or not they are incompatible; but in fact the editor is simply describing the true state of affairs. In contrast to Markus, and Benbasat & Zmud, some are happy to embrace a 'fragmented adhocracy'[22], others argue in favour of diversity, and against any effort to develop and regulate a unifying paradigm. This latter group might point to other disciplines that are in a similar state, but the *MISQ* editor argues that this is no reason to ignore the real concerns.

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15 *Adhocracy* – the term in this context seems to have first appeared in Alvin Toffler's *Future Shock* in 1970; it was later used and popularized by Mintzberg (1989) in his writings on organizational forms and strategy.

What we have as the current state of affairs in IS is a paradigm case of a discipline as a flawed *discursive formation*: Constantly engaged in the Sisyphean task of having to justify its existence; fraught with debates on what constitute relevant research topics, and legitimate and valid research methods. Much as some might wish this state of affairs to be brought to an end in some conceptually sound and conclusive fashion, this is not going to occur. On the other hand, the discipline can be seen as an 'incessant activity of discourse' spawning the *narrated reality* and the *narrating reason*; with both emanating from a well-recognized and self-perpetuating group of institutional sites. Thus the editors and key contributors to *MISQ* and IS Research, together with those at the top echelons of the Academy of Information Systems [AIS], IFIP [International Federation for Information Processing], and key funding organizations could seek to impose their view of the *core values and properties* on the discipline through the expedient of supervising – or 'policing' in Foucauldian terms – the avenues of publication, recruitment and research funding. Benbasat & Zmud seem fairly content with the 'sociopolitical' basis for the discipline; and many would agree – albeit from a position of criticism rather than satisfaction – that *MISQ* and IS Research have succeeded in narrowing the range of issues and authors that gain access through these journals.

It might then appear feasible for a series of wide-ranging and coincidental editorial decisions to establish the boundaries and identity of the discipline. Perhaps this is already in train in the aftermath of Benbasat & Zmud's positing a set of core values, and Orlikowski & Iacono's insistence on a focus around the 'IT artifact'? But any such attempt at *closure* is fortunately unlikely to prove effective; and although the IS disciplinary establishment is fairly easy to identify (consisting of real authorities and virtual institutions), it is unlikely to strive – consciously – for such an end.

Moreover any attempt to implement such a strategy will be undermined by the terminology. The authors of the FRISCO report (2001) note that not only is there a varied vocabulary – IT, IS etc. – but that even those who use the same term, often mean different things, and those who 'interpret *information system* in the same way use apparently different sets of concepts to explain it, and they apply a different terminology'. Contributors to *MISQ*, *ISR* etc., students and others will – and should – continue to find comments on their work when they use the terms IT and IS interchangeably or with inadequate foundation. But no-one will be able to offer a

definitive, once-and-for-all set of definitions; we can only aim to provide attempts at clarity and coherence.

The foregoing should not be taken to imply that *MISQ & ISR* are total redoubts secured against any alternative or critical voices. The issue in which Benbasat & Zmud's article appears also contains a paper by Lamb & Kling (2003) aiming to 'reconceptualize users as social actors' – with Zmud himself identified as the accepting senior editor. It could be argued that this is squarely within the core properties of IS – a component of the *nomological net*; but this is difficult to sustain after a careful reading of the piece and its bibliographical sources. More critical, however, is the observation that many of the authors of papers in both journals seem to be drawn from a relatively small and specific group; one which excludes many well known figures who publish widely elsewhere. Of course this may be a self-perpetuating state of affairs, with non-like-minded researchers failing to submit their work to these two journals since they have gained a reputation for 'only' publishing 'main-stream' articles.

Bauman observes that the 'predicament of sociological discourse may best be grasped by the Kantian idea of an *aesthetic community* … a territory defined by agreement inside well-protected boundaries' (1992, p75). A similar predicament confronts the existing IS discourse, for Bauman shows, using the work of Lyotard, that such a community is an illusion.

> The community required as a support for the validity of such judgment [of taste] must always be in the process of doing and undoing itself. The kind of consensus implied by such a process, if there is any consensus at all, is in no way argumentative but is rather allusive and elusive … This kind of consensus is definitely nothing but a cloud of community. (quoted in Bauman, 1992, p75)

In his later writings Bauman claims that all communities are illusory; but here Bauman concludes that sociological discourse is truly constituted by the Sisyphean objective of seeking to establish and sustain a 'real community'; yet if ever it managed to achieve this goal, it would mark the death knell of the discourse: So too for IS and for informatics.

This means that although efforts such as those of Benbasat & Zmud, Markus, and Orlikowski & Iacono are ultimately doomed; they are also ineluctable and must be awaited and answered. In so doing there is the necessity to develop critical thought in Foucault's sense of 'the endeavour to know how and to what extent it might be possible to think differently, instead of legitimizing what is already known' (quoted in Bauman, 1992, p83) – what Rorty promotes as *abnormal discourse*. The proposal to consider the full implications of the term *informatics* is precisely an effort to bolster this abnormal discourse.

What might this abnormal discourse look like? And what is the *normal* discourse that it seeks to challenge? Again Bauman offers a basis for understanding this in the infological context from his perspective on the sociological. As has already been noted, Bauman locates the emergence of the sociological with the outcome of the encounter between the ambitions of the modern state and the 'awesome task of the management of social processes'. This led to a discipline characterized by an 'engineering-reformatory-managerial' edge; one which saw itself at least as much beholden to practitioners as to the academy. This is immediately applicable to the existing IS discipline, which has a constant yearning for 'relevance' in precisely this sense of reference to the practitioners.

This has become a clearly articulated key issue following Westfall's paper of 1997 entitled 'An IS Research Relevance Manifesto'[23]. This states that 'we need to be more relevant to meet the increasing needs of our students, the organizations that hire them, and the larger society.' This is a perfectly laudable aim, even if it again springs from the perceived threat to the IS academic field – 'The IS field is shrinking'. Whether the issue of relevance can be addressed across the three constituencies – students, organizations, society – without contradiction is another matter, as is the fixation with IS *Research*; why not locate the source of relevance in the discipline itself, stressing teaching and education?

Bauman notes that early sociology was *monological* (NB nothing to do with *nomological*, although Benbasat & Zmud's outline of core properties seems to emanate from a monological stance), treating its subject matter as a series of objects, to be assessed, measured and regulated. The process of investigation was a

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16 Note that this US author refers to IS rather than MIS.

monologue conducted by the active and articulate researcher with respect to the passive, silent topic of investigation, rather than a *dialogue* between two or more participants. With its origins in computer science and IT, the discipline of IS in its present guise emerged in a similar fashion, and still retains this identity, although now it is increasingly tempered by a dialogic orientation that challenges such assumptions. This owes much to the emergence of several varieties of abnormal discourse, many emanating from within established IS institutions.

In this early phase, informatics in its IS embodiment – like sociology – developed as a series of efforts aimed at ameliorating the introduction of technology into the organizational work place, where it was seen as a prime source of increased efficiency and enhance effectiveness. As such the discipline was largely seen as a method of enquiry derived from a quantitative approach based on empirical methods and measurement.[24]

Using Weber's term, Bauman states that there was an *elective affinity* 'between the scientifically objective ambitions of the rising sociology and its managerial involvement' (1992, p79); a similar but more intense affinity applied to the ambitions of the emerging IS discipline in the 1960s and 1970s – and still pervades many aspects of the IS world.

In a fairly short time, this overwhelmingly monological and behavioural view was challenged; but even now a large part of the IS community – however ethereal that might be – work largely with a view that centres on '*managed social processes* … that cast social reality as an object of a designed change … while *disarticulating* all other aspects' (Bauman, 1992, p81). These 'other aspects' include human subjectivity, and asymmetries of influence, power, control and deviation.

The challenges that did arise to this position can be seen in part as impelled by the wave of *post-modernity*. A phenomenon that has swept across all disciplines, and which Bauman describes as a combination of two aspects whereby the political state has retreated from 'programmes of grand social engineering' and where the intellectual faith in 'utopianism' and 'foundationalism' has been undermined. (Bauman teasingly invites the reader to decide which of the two was the initiator. If it was the first, then the intellectual response is just that, a mandated reaction that occurs

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17 And so closely linked to Taylorism and other forms of investigation into work discipline and regulation aimed at enhanced productivity and efficiency.

as a necessary adjunct to a changed situation. If it was the second, then this casts contemporary intellectuals in a more favourable light.)

> Without deciding between the rival claimants, we can still agree that much as there was an intimate link between universal ambitions of legislative powers and the unchallenged domination of legislative reason in philosophical and social-scientific discourses, there is more than coincidence in the simultaneous erosion of the two. (Bauman, 1992, p82)

Bauman sees the impact of this on sociology as turning the two faces of the discipline to face in the same direction. No longer is there the tension between one orientation to the state and another to the individual. The state is no longer a key focus, it has been replaced by an organizational one, in which individuals strive for and seek to sustain their identities. It is as if Mills' *sociological imagination* (1959) has been dismantled and supplanted by the *organizational imagination*. Whereas the former required individuals seemingly to efface themselves, or at least to absent themselves while allowing supra-individual forces free rein – at least at the explanatory and conceptual level; the latter results in a mutual dependency between 'the guardians of mini-orders and the individuals abandoned to the tasks of self-construction' (Bauman, 1992, p89), both having a vested interest in '*managerial services*'. Management and self-management differ in degree, but not in kind; both require 'an *interpretive*, a sense-making, a *world-mapping* knowledge, that results in a mental setting in which decisions are taken and freedom of choice is exercised'.

In some regards Markus seems to be moving along similar lines in noting that the unit of analysis for Academic IS 'sets it apart from other similar fields', since it is concerned with organizations and individuals or groups embedded in organizations. Moreover this organizational orientation has to develop from a purely internally-focused one to an externally-focused one, incorporating inter-organizational processes. This looks promising but Markus' perspective seems far more focused on systems applications – in the computing and IT sense of the term – than it is on organizational processes, and her conception of 'electronic integration of socio-economic activity' is weighted far more to the electronic side than to the socio-economic one: Hence her desire to create the 'IT field of the future'.

Bauman's view is that contemporary sociology 'does not need *protreptics*' (literally an urging on, or persuading – derived from Plato's praise for the Socratic method of instruction), because it is 'resonant with its own structure … a flexible and self-reflective activity of interpretation and re-interpretation'. Informatics as it currently exists is not in the same position, lacking the *fluidity* that Bauman repeatedly invokes in his current writings. Such an objective might be one worth invoking, but at present this is not the future that the disciplinary gate-keepers appear to have in mind. Within existing IS the lessons of post-modernism are still in the process of being understood and evaluated. Judging by the trend of articles in *MISQ* and *ISR*, the 'engineering-reformatory-managerial' flavour still retains its centrality and influence in the discipline; albeit under increasingly vociferous challenges. Those who have sought to articulate this as the rationale for the discipline either end up with an outline for a *legislative* and regulatory basis – Aldrich's 'sociopolitical', but with *disciplinary* overtones; or undermine their own argument with far too wide-ranging a characterization of the discipline.

For the former – such as Benbasat & Zmud – a number of questions are raised, or begged: Who should define the core properties? Who should arbitrate on what counts as 'errors of inclusion' and errors of exclusion'?

For the latter, including some interpretations of Markus' *integration*, and Orlikowksi and Iacono's 'IT artifact', the issue is *what is left out* of their characterization of the discipline?

Markus seems to want to integrate everything with everything; but this seems to be a route to certain oblivion and eventual disappearance. More alarmingly, she specifically expresses the hope that somehow we can all start over, with a clean sheet – but this is exactly what we cannot do. Although it is not a sufficient basis for a discipline, it is still necessary for there to be a 'body of knowledge, and … certain practices which use this knowledge while simultaneously adding to it' (Bauman & May, 2001, p2). Markus herself seems to understand this when she targets what she terms 'canonical AIS' (p181). She fails to develop this idea or even to give much credence to the idea of a canon of/for the discipline; hence her call for a new start. We might term this a *tabula rasa informatica*, which like all examples of a *tabula rasa* is an interesting assumption or premise, but a cognitive impossibility. Her use of the term 'canonical' is firmly located in and around the technology – the 'IT artifact'.

Thus in discussing 'canonical Academic IS' she mentions minicomputers, PCs, office automation, networks and communications systems.

The word *canon* itself is derived from the Greek word for model or standard; but the term is usually understood to have religious connotations, referring to a regulation or dogma of the church, or more specifically to an authoritative list of texts forming The Holy Scriptures. Thus the first canonisation exercise is held to date from the formal selection of what constituted the Hebrew Scriptures, 'made by an emergent priestly caste around the seventh century BCE' (Pollock, 1999, p3). This religious meaning has been displaced, but the term itself appropriated by secular bodies, so that it now refers to a 'displaced religious sense of the sacred text as the beacon of common culture for an educated elite' (LaCapra, quoted in Pollock, p3).

The many and increasing allusions to a list of technologies – 'IT artifacts' – are indicative that the IS canon is perhaps at present literally a list of models or standard forms of technology, presided over by a small and self-selective group of gatekeepers. On the other hand, the wider and far less established informatics canon – in the sense of a set of writings – is in disarray or of questionable status. In this sense it is akin to the canon of Qumran, a collection of manuscripts found in the Judean Desert since the 1940s; a series of individual scrolls, but with no guide to their sequence or associations. The situation is made more contentious by the presence of several extra-canonical works, including parts of what are now termed the *Apocrypha* (texts not included as part of canonical Judaism) and *Pseudepigrapha* (books falsely ascribed to biblical authors). This evokes the image of the 'fragmented adhocracy' alluded to earlier in the context of IS and informatics.

If informatics is to have any claim to be a discipline – and to be distinguished from IS – then, although there is no need for a canon, there must be a generally recognized and elaborated 'body of knowledge' that can be identified and assessed; and continually revised and developed. In many of his writings, Bauman uses the metaphor of *gardening*, evoking the sense of an engagement with natural growth, but one where there is an agenda of control, selectivity and engineering. So too must this be seen to apply to the development of an informatics body of knowledge. The religious control of the canon no longer exists, but as Pollock shows, the canon, although often presented in terms of a naturally emerging order, is in fact the result of

a sustained process of selection and discrimination. But this is never totally effective, and leads to the blooming of many different varieties – if not a hundred flowers.[25]

The current IS establishment is remarkably free from the sexual discrimination that prompted Pollock's work; but this is not to say that *everything in the garden is lovely*. On the contrary, there is a profound sense in which many would see the current IS canon – inchoate as it might be – as a North American fiefdom, profoundly positivist and heavily slanted towards neo-liberalism. Fortunately this position has been and continues to be increasingly challenged, both from within and without; but there is still a sense in which the limitations of the normal discourse and even the abnormal discourse need constant re-positioning. Moreover if people are to be encouraged and provoked into *thinking informatically*, then not only must the IS canon be challenged and renewed, but so too must a whole raft of other discourses and their canons.

Informatics is then a discipline constantly having to apologise for itself and continually having to reassert its right to existence – and funding. In fact it is a still, small voice battling under a partial pseudonym of IS. Inside IS is a larger discipline struggling to emerge and develop its own identity; the irony is that neither IS nor informatics will actually be able to do this if the concept of discipline is seen in terms of the erection and defence of boundaries. Following Foucault and Bauman, disciplinary practices have to be seen as fluid projects not as structural and structuring strategies. The task is endless; at its core is not a single, clear objective but an unremitting process of continual explanation, explication and dialogue.

The IS community is truly an imagined one – but some of its members have stronger and more influential imaginations than others. Not all, however, have similar or even consistent/complementary imaginings, hence the constant struggle between the claims for the disciplinary centre ground or bases. Those advocating the centrality of concepts such as the IT artefact, nomological nets, and the like have to do battle with those who are equally strident concerning other bases for the discipline, or none at all. The discussion in the wake of Benbasat & Zmud's article is evidence of this

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18 There are several projects aimed at establishing bodies of knowledge [BOK] in areas such as Information Management, Software Engineering, Quality Management, Project Management etc. This book is offered as a contribution to the development of an informatics BOK.

conceptual variety. The point is not to pursue some form of conceptual closure but to engage with the flow of argument.

There are no boundaries – although of course in terms of jobs, funds, resources and the like someone, somewhere will make boundaries pay and so some form of disciplinary advocacy is demanded – but this is a very different project from the conceptual one.

Whatever the outcome – however temporary – informatics is essentially permeable, with both a push and a pull to this permeability. The pull can be found in the constant *borrowing* of terms and models from other disciplinary discourses – particularly engineering, but now increasingly also from sociology, semiotics and cultural studies. The push refers to the ways in which terms such as information, IT and the like have become part of common parlance. The push usually comes after the pull, and in some cases the initial borrowing is returned with added richness – sometimes in a confusing fashion as will be seen in chapters 2-4.

With regard to the social and organizational borrowings, there have been influential uses of ideas from Giddens, Habermas, Foucault, Latour and many others. Rather than disparaging or discouraging this, it is essential that it continue. In effect it is part of the rounding out of the disciplinary discourse of informatics into the full definition given earlier.

In recent years the work of Anthony Giddens has been highly influential in the IS academies; particularly his work on structuration[26] (1984). This has been in keeping with a trend that sees the discipline as a social science rather than a technical-managerial one. This characterization has not, however, been readily or universally accepted, and the continuing discussions about 'core properties' and the like indicates an extensive uneasiness about moving too far towards a qualitative social science. Nevertheless it is clear that such a tendency is growing in importance, and if it is to be nurtured as a contending viewpoint then the engagement with or move into the humanities must be taken more seriously. In this case the work of Zygmunt Bauman

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19 The concept of structuration is itself derived from Bauman's work, specifically *Culture as Praxis* (1999, originally published in 1973).

offers an important basis for such a project. His writings on post-modernity and culture, although not engaging specifically with technology, information and communication, are a key resource in the development of informatics as a discipline.

In the chapters that follow I intend to offer a series of suggestions of ways in which we can begin to *think informatically* – openly and avowedly borrowing from Bauman's work. Before this can be done, however, some extensive *ground clearing* is required, targeted at the three key terms at the heart of the field – however defined – *information*, *communication* and *technology*.