The Dimension of Time: Historiography in Information Systems Research

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There is much to be learned from the study of history yet, as a form of research, historical studies have been largely overlooked by the IS community. It is argued that many current information systems can be best understood in terms of decisions taken in a particular temporal context and that by ignoring history, IS research is overlooking a powerful source of insights into the nature of such systems. Based on work in IS and from elsewhere, an outline for a historiographical research method in IS is presented and some issued related to this are discussed.

Keywords: Information Systems, History, Historiography, Interpretive Research.

1. Introduction

"Those who do not learn from history are condemned to re-live it" (George Santayana).

The economist, Joseph Schrumpeter once asserted that any discipline must have four components namely:

- empirical data (observations and facts),
- theories/paradigms,
- an ethics and
- a history.

As a research field, IS has been strong on the first two of these, but less strong on both of the others. Of the latter pair, IS ethics has been steadily gaining momentum as a research field since the 1980s (for example, Mason 1986, Oz 1988). There is an Australian Institute of Computer Ethics (http://www.aice.swin.edu.au/), a Journal of Ethics and Information Technology (http://www.kluweronline.com/issn/1388-1957) and a number of other bodies and researchers actively involved in this field. By contrast, examples of rigorous historical research in IS have been few and far between. Both this literature, and the wider IT history literature are discussed below. It is the contention of this paper that there remains a distinct shortage of good IS historical studies of the development of information systems in organisations and of how IS influences and even shapes organisations over the long term. This is a big subject. What follows must, of necessity, pass lightly over a number of deep issues. What is attempted is to provide both an overview of the field and make the case for more research into what is a fascinating and rich vein of knowledge and insight.

2. What constitutes historical research in IS?

2.1 The beginning of IS history

In making a case for more study of history in IS, the first step is to recognise that, as an historical field, IS is still in its infancy. There are various points from whence one might choose to locate the start of IS history, ranging from the time of Charles Babbage (1791-1871) to the launch of the IBM 360 in 1964. For information *systems*, an appropriate start is the LEO computer system, considered by many to be the first real commercial computer system (Bird 1994, Camier *et al* 1997, Camier 2001). The first ever commercial application of electronic computing (not surprisingly a payroll) was implemented by John Pinkerton on LEO in 1951. Starting in 1951 gives researchers approximately half a century of IS history to explore; not a huge expanse of time but, given the explosive growth of ICT over this period and the relatively short life of many businesses, this is ample material with which to work. Fifty years is a long time in the history of any organisation.

2.2 History and the longitudinal study

Secondly it is necessary to differentiate historiography from other forms of research over time such as longitudinal studies and time series related research. Longitudinal studies are discussed by a number of researchers including Pettigrew (1989) and Lauden (1989). The difference between a longitudinal study and an historical study is a subtle one, but one worth making. Distinctions between these two types of research can include some or all of the following:

Timescale: Most longitudinal research takes place over a relatively short period, say three to five years. Where it occurs, long term longitudinal research is often

intermittent, i.e. it looks at the state of a system or organisation or whatever at intervals, for example every five or ten years.

Presence: A longitudinal study implies that the researcher is present, if not all of the time, then at least at intervals during the period in which events are being studied. Historical researchers, on the other hand, are rarely present at the time of the events being studied.

Real time: Implicit in the preceding points is that a longitudinal study looks at events as they happen, not in retrospect (although it may subsequently reflect on these events in retrospect). Historical research generally considers events in retrospect which both gives a different perspective and necessitates different research methods.

Sources: Longitudinal studies are generally based on observation and contemporaneous measurement. Historical studies generally use a variety of other sources such as documents, commentaries, artifacts and interviews with external observers or commentators.

Focus: A longitudinal study follows a thread of events over time and its aims are description and explanation. Historical studies may do this of course, but historical studies usually interpret and sometimes judge.

Notwithstanding the above, the line between the longitudinal study and the historical study is a blurred one. Historiography is generally (though not necessarily) concerned with events that happened over quite a long period, but it can also be concerned with a short episode or with current events. The terms 'living' or 'contemporary' history are sometimes used to describe the latter. But cases such as this are the exception rather than the rule. Most of the time, the historical researcher will not have been present when the events occurred and will have to reconstruct and interpret events from a variety of sources.

2.3 Time series analysis

Another type of research analyses data gathered over time (frequently by somebody else and for a different purpose). By definition, most time series related research (which encompasses, *inter alia*, much econometric research) is dealing with both the past and an extended period of time. A well-known example of the latter type of research is that of Loveman (1994) and Brynjolfsson and Hitt (1994; 1999) who used data collected over the period 1978-1984 to examine the productivity paradox. Hitt and Brynjolfsson, like other statisticians and econometricians, may seek and sometimes find patterns in data, but they are not carrying out historical research. Nor, one suspects, would they claim to be doing so.

2.4 Defining historiography

There is not space in a short paper to expound at length on the nature of history and historiography, but this debate about this cannot be avoided if a rigorous tradition of IS historical research is to be developed so it is useful to summarise at least some of the issues in historiography which have been fiercely argued over the past 200 years or more.

Perspectives on what constitutes history have changed over time. Carr (1961) states that the 19th century was concerned with 'facts'; in the words of the German historian Ranke, the purpose of history was simply to "…show how it really was (*wie es eigentlich gewissen*)" (Carr 1961, p3.) Historians who followed this doctrine were called Positivists. Methodology comprised establishing the facts, then drawing your conclusions strictly therefrom. As in positivist science, such an approach is predicated on a separation of subject and object. To followers of Ranke, all writing before this point might have been literature or even evidence, but was not history. So much for Herodotus and Anna Comnena!

Towards the end of the 19th century ideas about what constituted history started to change. It began to be argued that history was about interpretation and that any history needed a 'philosophy'. Collingwood (1993) considered that the study of history was the study of thought. History, as viewed by Collingwood, is the re-enactment in the historian's mind of the thought whose history he is studying. To add to the difficulties, the evidence with which historians have to work is often, if not actively partisan, written by the winning side or by members of a certain class or group. Worse, throughout much of history, history itself was not considered that important. According to Galbraith (1951), history was not part of medieval education. Had not Aristotle himself declared that history was less worthy of

attention than history (Connell-Smith and Lloyd 1972)?

From this lengthy debate, two points are worth distilling out for the purpose of the present discussion. First it is simply not possible to know everything about history. Thus for example, Elton (1955) in the preface to his study of Tudor England reflects on the various ways he could approach his subject: from the viewpoint of religion, maritime expansion, Shakespeare and so on. Since it is impossible to view a complex series of events holistically, most professional historians choose to focus on some aspect of history and follow that.

Secondly Stanford (1986) describes the structure of history as follows:

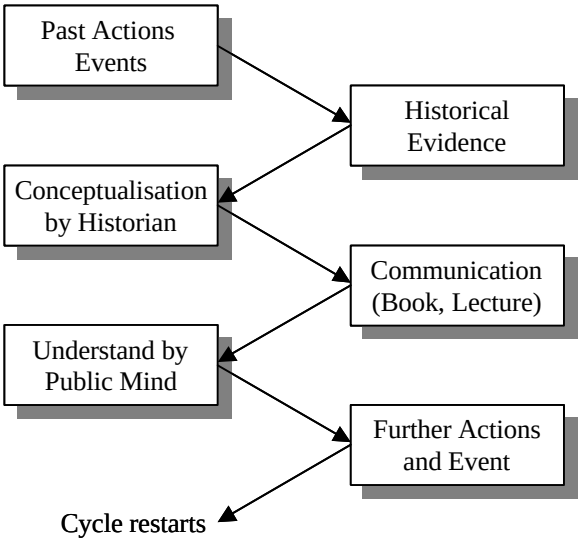

Figure 1: Structure in history (after Stanford (1986))

Both of these have relevance for any study of IS history. There are many viewpoints from which one might approach the subject: the development of hardware, the impact of the military, developments within the airline industry and so on. Secondly, a cursory glance at figure 1 immediately shows why many of the issues that one encounters in reading about historiography are the same as those that one encounters when dealing with interpretive research. The sequence shown in figure 1 could, with a few minor modifications, be used as a model of the interpretive process as described by Walsham (1993). The main difference between historical research and interpretive research into current events may come down to the absence of living witnesses in studies of the past.

3. Published historical research in IS

3.1 Introduction

It was stated in the Introduction that there were relatively few IS historiographies. Specifically, there is only a modest number of journal and peer reviewed publications of the development of IS within organisations over a prolonged period of time. Some of these are discussed below. However there has been a considerable volume of output on the history of the information *technology* and the IT industry in books, the trade press and in academic publications.

3.2 Histories of IT

There is no shortage of good research on the history of computers and information technology, *qua* technology. Publications range from popular books through the *IEEE Annals of History of Computing* to numerous professional articles and conference papers. There has also been, since 1988, a series of conferences on the history of computing held in various locations in France (*http://www.aconit.org/colloque2002/).*

There are many books on computer history. Amongst those looking at the development of computer technology and/or the computer industry are Malik (1975), Kidder (1982) Augarten (1984), Basche (1986), Camier *et al* (1997), and Campbell-Kelly and Aspray (1996). Other authors have studied different facets of the industry such as software (Campbell-Kelly 1995) and computer languages (Wrexblat 1981). Some books, notably *Kidder's Soul of a New Machine*, which won both a Pulitzer Prize an American Book Award for Non Fiction, and Cringely's idiosyncratic account of the development of the PC industry, *Accidental Empires*, (Cringely 1996) have been best sellers.

There have been many articles and papers published on aspect of the evolution of the industry. The *IEEE Annals of Computing History* have been published since 1979 and provide a wide range of scholarly articles on various aspects of IT history. A recent paper from the *Annals* by Ceruzzi (2001) contains an overview of the past 20 years. However few of the articles published in the *Annals* over the past 30 years are about information systems. The focus tends to be either on the history of specific technologies or technology companies or on the impact of technological developments on an industry or society as a whole. In Spring 2001, the journal *Business*

History Review devoted an issue to IT history (Haigh 2001, Berlin 2001, Campbell-Kelly 2001, Abbate 2001) (This may have been to make up what is a notable deficiency. Over the period 1970 to 2000, *Business History Review* published only one article in this general area: Wells (2000)). Of these, the article by Haigh might be broadly classified as being about the impact of information technology on organisations generally or at least about systems issues. The other three are firmly in the tradition of the history of the technology the computer industry.

3.3 (M)IS historiography

In contrast to technology and industry history, when one seeks research on IS or MIS, the amount of published work is remarkably small. As Mason et al (1997b) point out, historical studies of MIS are not the same thing as historical studies of technology or of the development of the IT industry. Historical research of this nature is confined to a relatively small number of publications although the shortage in quality is made up for by the high quality of several of these.

A number of these publications revolve around a project which has drawn a great deal of attention: the development of the Operational Strategy by the UK Department of (Health and Social Services)from 1981 onwards. Studies of this include Dyerson and Roper (1991), Fallon (1993) and Margetts (1999). Margett's study is part of a wide ranging scholarly work which compares the development of the tax and social welfare computer systems in the US and UK over a twenty year period. At the other pole, Fallon's more journalistic approach describes the system from its inception in 1981 to the implementation of the main system in the late 1980s and early 1990s.

A further stream of work emerged from the Harvard MIS History project (Carlson 1993). A number of researchers were involved in this project including Carlson, Mason, Copeland, Fisher and McKenney. Publications which resulted from this include the widely cited study of airline reservations systems (Copeland and McKenney 1988) and a number of publications by McKenney and others on the development of electronic banking in Bank of America (Fisher and McKenney 1993, McKenney *et al* 1997). The work of the Harvard MIS History project culminated in the publication of a book (McKenney *et al* 1995).

Recently, a number of other scholars have looked at organisational issues over time. Winter and Taylor (2001) analyse the impact of IT on the transformation of work as does Orlikowski (1996) though neither of these are really historical studies. Campbell-Kelly (2001b), probably the leading UK historian of IT, examines the impact of IT on organisation in the British census at the turn of the 20th century. Yates (1995) has studied the impact of application software on the insurance industry during in the 1960s and early 1970s.

There are therefore some good exemplars of historical research in IS, but considering the scale and scope of IS in the 50 years since LEO produced its first payslip, this is a very modest literature indeed.

3.4 Theories of IS history

The aim of the historical positivists, or at least of positivist philosophers of history, was to use the fact to derive theories of history. In terms of IS history, three such theories are worth mentioning, although only one of these emerges from the 'history' literature and that is that proposed by Mason, Copeland, McKenney and Fisher. This theory is discussed in the following section. A number of other researchers have offered models of IS evolution over time which, even if not considered by their authors to be 'historical' research, are based on observation of how IS evolves in organisations. Two well known examples of this are the Nolan-Norton model (Nolan 1979) and Scott-Morton's (1991) model of IT evolution.

Finally, in this brief survey, a number of other scholars have come at history from a more reflective or specific position. Examples of this include Ein-Dor and Segev (1993) who look at the emergence of different types of information system over time and Locker *et al* (1996) who consider some of the historical problems in examining the history of business communication. Within the field of medical informatics, there have been a number of publications which have looked at the historical development of this field including Blum and Duncan (1990), Collen 1995 and Kaplan (1987; 1988; 1995).

This short review does not claim to be comprehensive and is only part of a continuing project to establish the extent of studies of IS history. However, at this stage it seems reasonable to conclude that while the history of technology has been and continues to be well served, there is room for much more research into the historical evolution of IS in organisations.

3.5 Why the vacuum?

Why in comparison to the history of computing *per se*, has historical research in IS been largely ignored? The reasons for this are not obvious. It cannot be because it is uninteresting. Four possible reasons are:

1 It is by nature interpretive and, until relatively recently, interpretive research has been poorly regarded by many researchers. This was shown clearly by Orlikowski and Baroudi (1991) in their study of the assumptions underlying IS research (see also Lee 1991).
2 Historical research is not a research technique with which IS students are familiar. A student who wants to do historical research into IS will not find anything about this in the text books or in the typical research methods course. IS is a dynamic subject with a short half-life of knowledge. Yesterday's technology is quickly forgotten in the pressure to keep knowledge up to date. To misquote Henry Ford, history is junk.
3 It involves research methods which IS researchers find uncongenial. Historical research involves searching through archives, building up indices of documents and possibly even physically searching for material. The actors who participated or shaped the events at the time may not be accessible (or even alive), so researchers have to rely on secondary or even tertiary sources, something with which IS researchers are not always comfortable.
4 .There is little by way of methodological guidance available within the IS literature. The shelf is not entirely bare. There is some good work by Copeland and Mason, which is discussed below, based on the work of the Harvard MIS History project.

Whatever the reasons for the lack of activity, this neglect is unfortunate. Historical research offers many attractions to IS researcher and, as the next section shows, there is at least one methodological model available to follow. Furthermore, there is also considerable scope for developing new models based on the wide historiographic research literature.

4. Methodological issues

4.1 Historiography and other IS research methods

Historical research is not radically different from other types of research which are widely used in IS. As already noted, echoes of the debates within IS are to be found in discussions of historiography amongst professional historians. When one considers the specific case of IS or even more specifically MIS, an immediate question is whether, as Keiser (1994) suggests is possible for organisational history, there are patterns or theoretical models that emerge from history?

4.2 One framework for IS research

One theory of IS evolution in organisations which can be used as a frame for such research has been proposed by Mason *et al* (1997a). This encompasses two concepts. The first is what they describe as three historical roles. The first role is that of the leader who recognises a crisis and the need to respond to it. The second is the maestro, a person who understands both the business and the technology and who has the confidence of both communities. The third is the 'supertech', the person who comes up with the innovative or creative solutions.

The second construct that they propose is the cascade. The cascade is a conceptual framework for describing the development or emergence of an information system and is predicated on there being a 'crisis' in the organisation which IS is used to resolve. It runs as follows:

- There is a crisis;
- This is followed by the search for a technical solution;
- An initial technical solution is found;
- This leads to an adjustment in the organisational structure;
- Assets are formed which resolve the crisis;
- Competitive advantage results;
- A dominant design emerges.

Based on this precept, their method involves a number of steps. First, the researcher should ask 'focusing questions' broadly along the following lines:

- What were the social, technical, political or economic factors that caused the crisis that threatened the organisation?
- Why was IT proposed as a solution?
- How was the technology identified, selected, infused and absorbed?
- What conditions favoured innovation in this organisation and not in others?
- Who played the key executive and technical roles and how were these roles played?
- How did the subsequent events unfold?
- What was the result?
- How was the organisation changed?
- What changed in the industry as a result?

Secondly the researcher should specify the research domain and determine the primary and secondary units of analysis. Typically the primary unit is the organisation, the secondary unit being the industry/economy within which it operates.

The third step in their method is gathering evidence. This starts with public sources. The timeline, in particular, is a key methodological tool (this tool is also used and discussed by Pettigrew (1979)). In research of this type there are, as elsewhere, primary and secondary sources. Secondary sources can be used, but are not generally adequate for good research (they use the interesting term "espoused theory" to describe the bias that can be induced by this type of research). Primary sources are key and these are of four types:

- Written (e.g. notes, diaries, internal documents generally).
- Material in the form of objects.
- Traditional in the form of stories.
- Eye witnesses. These are the most important primary source.

This method is close to that described by Yin (1993; 1994) for case study research. In fact, if the case approach as outlined by Yin is combined with Walsham's ideas on interpretive research, the result is, as a methodology, quite close to the above outline and to that in diagram 1. The limitation of Mason *et al's* methodology is its assumption of a crisis. Not all organisations undergo crises of the magnitude described by the McKenney *et al* (1997) in the Bank of America. If we are to believe Greiner (1998), all organisations go through a regular series of crises as they grow, but these are not the types of crisis envisaged discussed by Mason *et al*. It may be a fruitful field of research to examine the relationship between the evolutionary crises that Greiner describes and the evolution of IS.

4.3 Possible future directions into the past

That said, it does not take a major crisis to justify an historical study of IS in an organisation. The idea of dominant design is a powerful one, but one which, by definition can only be created in a minority of organisations. What of organisations which neither have such a crisis or where no dominant design emerged or where such a design emerged without a crisis? There is much to be learned from such studies. Questions that might (and in some cases have been studied) include:

- How has the evolution of information systems affected the evolution of power structures within organisations?
- Why do some organisations use IS much more effectively than others over time?
- How have organisational structures been altered over time by IS evolution?
- Can a dominant design be achieved without a crisis? Is leadership alone sufficient?
- How important is the role of leaders/ individuals in long term effectiveness in use of IT?

There are also many other areas of IS research which might benefit from deeper historical research. These include:

- IS value;
- IS/IT diffusion;
- Knowledge management;
- Decision support;

and so on.

The conjecture at the heart of this paper is that such issues as the use, speed of diffusion, effectiveness and value for money obtained of IS are things which are in large part a product of historical decisions. The methodology to investigate this conjecture is essentially a combination of case study, interpretation and good, old fashioned digging and interviewing, but there remains work to be done on developing further theoretical frameworks beyond the special cases considered to date.

5. The case for historical research in IS

In his writings on business history, Alfred Chandler asks a series of provocative questions. What in the past has given businesses the opportunity or created the need for them to change and what were they doing when they did it? What did business leaders know at the time? Why did the change come when it did? Why did it take the form it did? What was the result? To these questions we may add: what did IS add to this process?

The case for further research into the history of MIS was forcefully made by Mason *et al* in 1997 in *MIS Quarterly*. In so doing they draw on work by Kieser (1994) on organisation theory. Keiser suggests that there are four reasons why historical research would add value to that discipline, all of which apply to IS:

- First both the structure and the behaviour of organisations reflect the culture and circumstances in which they develop.

Technology innovations are, in Mason *et al*'s (1997b, p310) interpretation:
"…heavily conditioned by the historical milieu from which they emerged. Contemporary economists refer to this as path dependence."

- Secondly, the path or trail of an organisation results from influential decisions that key parties make. Keiser argues that historical analysis teaches us that existing organisational structures are not determined by some set of abstract impartial laws, but as a result of decisions made by individuals and groups over many years. These decisions were made in response to problems and/or opportunities at the time and were conditioned by historical context.
- Third, the identification of organisational problems and of their appropriate remedies is often not free of ideology or the researcher's perspective. Sometimes history is fashioned to serve as a mirror of the researcher's own beliefs. This is, of course, the question addressed by hermeneutics, however the absence of eye-witnesses with whom the researcher can engage effectively terminates the hermeneutic circle leaving the researcher to interpret other 'dumb' sources of evidence. Good historical research can counteract this potential bias.
- Fourth, by confronting them with historical developments, theories can be subjected to a more radical test than they have to pass when merely being confronted with short run changes. A further advantage is that this sheds light on a society's, or in this case an organisation's, resistance to change.

Decisions made in the distant past affect numerous aspects of how organisations use IS today including IS organisations, suppliers, architectures, applications and attitudes. Moreover, the historical perspective can give quite a different picture of events. In the introduction to their article on the SABRE system, Copeland and McKenney (1995) refer to how these systems have become popular (they might have said almost sacred writ) in the competitive advantage literature. However looking at them from an historical perspective gives a rather different view from the sometimes semi-mythical perception held by those who have never studied the genesis of these systems in any detail. This does not invalidate their role in achieving competitive advantage for American and United Airlines, but it does give a much deeper insight into how these systems emerged and in particular how far back in time these developments originated. SABRE was no overnight phenomenon.

6. Conclusion

It is almost a cliché to say that IS is an instrument of economic and social change and a specific case of what Schrumpeter calls industrial mutation. IS is one aspect of the phenomenon of creative destruction. It changes the way businesses do business and the ways that they are organised. Arguably information technology is currently the most influential force leading to the restructuring of business, politics and economics. In the process of this change, a new bureaucratic form is being created called the "information based organisation" (Drucker 1988). If we are to understand this organisation, we need to understand both how it has emerged as well as what it is.

The study of history offers a valuable perspective with which to view our present circumstances. History provides the context within which IS phenomena occur. History allows the researcher to follow a trail and illuminates the role of decision making in shaping events. At least four different products can emerge from IS historical research:

- An account of important past events,
- Use of the data collected in a process of inductive reasoning to see historical patterns,
- Validation or falsification of existing theory and
- New hypotheses.

Each of these is valuable in its own right. A good piece of historical research may yield all four.

Buckland (1998, p3) describes history and information systems as having 'an unusual relationship'. History is concerned with the analysis, weighing and interpretation of evidence. Information systems are concerned with the selection, representation and preservation of that very evidence. If there are no documents, there is no history. This paper started with a quotation from the philosopher George Santayana. It is apposite to finish with another quotation from Carr (1967, p68):

> *"Learning from history is never simply a one way process. To learn about the present in the light of the past means also to learn about the past in the light of the present. The function of history is to promote a profounder understanding of*

both past and present through the interrelation between them."

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E-Business Research Practice: Towards an Agenda

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This paper reviews recent research in the fields of e-business and strategic management. It discusses the key issues, questions and methodologies apparent in the literature to date. The paper also highlights the major research communities and centres and their interests. The overall intent is to highlight the opportunities for further work, potential approaches and future directions for inquiry.

1. Introduction

In just a few years, business use of the Internet has grown from a curiosity to a mainstream activity. Pioneers such as Amazon.com, Yahoo! E-Bay, Cisco and Dell have led the way, followed by numerous start-ups and ventures by traditional and smaller firms. Interest has not been restricted to the private sector and e-government has become a priority in many countries, including the U.K.

The hectic pace of advance in the late 1990s presented challenges and opportunities to management scholars and students. Suddenly they were faced with a living laboratory in which the subjects claimed that a wholly new set of rules had been invented for the 'new economy.' Normally serious and critical observers found themselves caught up in the rhetoric engendered by rapidly rising equity prices and a wall of new investment in IT ventures. In response to demand pressures and faculty interests, Universities and Business Schools launched numerous new programmes in e-business and e-commerce. E-everything became fashionable.

The sobering experience of numerous dot.com failures, earnings disappointments and corporate restructurings has taken the bloom off the rose. MBA graduates have now turned to the pursuit of traditional career paths in safer industries. Business Schools are re-evaluating the place of e-business in the curriculum. Nevertheless, the world is not returning to the 'business as usual' of the pre-Internet era. There is a continuing fascination with the transformational powers of new and disruptive telecommunications media. It is clear that firms in a post-recession economy will pursue further exploitation of the Internet, not only through current applications, but increasingly using mobile and other advanced technologies.

Against such historical backdrop, this paper seeks to:

- Summarise in critical fashion recent publications in e-business and e-strategy;
- Identify and classify the key issues and questions;
- Link research interests to concerns of business and management practitioners;
- Identify needs and opportunities for further investigation;
- Suggest further directions for inquiry and an agenda.

2. E-Business and business management research

This paper does not attempt to address the entire literature of Internet application and business management. Nor does it address research into the development and testing of the technologies themselves. The scope is restricted to the strategic impacts of the new information and telecommunications technologies for businesses and managers. Sub-fields of business such as e-marketing, e-operations, e-finance and supply chain management are only considered in passing. For more details readers are directed towards the growing specialist literatures in those fields.

As Clarke (2000) has noted, electronic commerce presents unusually significant obstacles to academic study and high-quality research, including:

- Its recent emergence;
- The rapid change that has always characterised the domain;
- The very substantial variation in behaviour in apparently similar contexts; and
- The enormous attention paid by media and marketing interests, with inevitable distortion of terminology and data.

To this list may be added:

- The lack of familiarity with e-commerce technologies by many management scholars;
- The lack of established instruments and research approaches.

To place these observations into context, e-businesses have been launched, progressed to IPO, grown and then collapsed in less time than a typical PhD student might take to complete the literature study and fieldwork of his or her dissertation. Major shifts in industry landscapes have also occurred in less than the usual cycle time for publication in top management research journals. It is hardly surprising that serious research has lagged significantly on practice to the extent of sometimes appearing irrelevant. Surveys and marketing-directed case studies by consulting firms have filled a void.

However, just as numerous texts on e-business and e-commerce are now listed in publishers catalogues, whereas there were next to none a few years ago, so there is now appearing a growing literature of e-business research. A number of specialist e-commerce journals have been launched (see reference section at the end of the paper).

3. Literature

A progressive maturing of the literature is evident in both practitioner oriented and scholarly publications.

Journals such as Harvard Business Review, Sloan Management Review, California Management Review, Business Horizons, Long Range Planning and the European Management Journal began to publish articles on the business use of the Web, virtual marketplaces, e-retailing and B2B commerce from about 1994.

In earlier papers (e.g. Rayport & Sviokla 1994, 1995; Hagel, 1996; Evans & Wurster, 1997) emphasis was on demonstrating what is new and different about the Web and the opportunities that it presents for businesses to innovate in radical ways and to discover new activity domains. Evidence for assertions made was typically presented in the form of anecdote, interviews or case studies.

A more considered reflection on how the Internet could be used to change competitive strategies, potentially destroying existing competencies as well as creating new sources of advantage began to appear in papers such as those by Ghosh (1998), Evans & Wurster (1999), Chen & Leteney (2000), Feeny (2001) and Rangan & Adner (2001).

Later literature more explicitly addresses the risks of Internet ventures, barriers to implementation, success factors and steps needed to manage technology-driven change (e.g Porter, 2001). The more recent literature also presents increasing evidence of empirical study in the form of surveys and more substantial and critical case histories (e.g. Kotha et. al, 2001). Industry specific studies have also become more frequent.

Work by Rayport (1999), Mahadevean (2000) and Timmers (2000) reveals a growing interest in the concept of a business model and how the Internet has made possible types of business model previously very hard, or impossible, to implement. An example is that of priceline.com in which consumers ask firms to bid for their business in a form of reverse auction. Porter (2001) has criticised much new economy thinking, including the notion of a business model. However, it is clear that e-business presents many challenges to traditional thinking in strategy and strategic management. Notions such as that of a business model arguably fill a void between grand concepts of strategy and detailed implementation, complementing tools such as the value chain and generic competitive strategies.

A key concern is how strategy can be developed in hypercompetitive markets where the speed of change makes traditional forms of analysis impractical. Eisenhardt (1998, 1999), Yoffie and Cusumano (1999) address this issue with concepts derived from complex systems theory and emergent strategy-making. E-business has also confirmed the significance of the resource based view of the firm. Competencies, such as knowledge management and the ability to integrate complex sets of technological and business skills, are identified as success factors in a number of case studies (e.g. Kotha, 1998).

Recent special editions of publications such as the Journal of Industrial Economics, Journal of Electronic Commerce Research and the International Journal of Electronic Commerce show encouraging signs of increased attention to research rigour and appropriate methodologies.

The references cited at the end of this paper represent a substantial, if not complete, coverage of publication in e-business and management in recent years. For brevity, referencing from the more specialist e-commerce journals has not been attempted and readers should explore these journals for themselves.

4. Research centres

A number of Universities and Business Schools have established centres for research and consulting activities in e-business. Typically such centres provide a bridge between the academic and corporate communities and a mechanism for research workers to attain a critical mass of inquiry. They are also intended to provide corporate sponsors with obtain access to independent and critical advice. They may also assist with executive education and training. Section 12 provides links to some of the better-known U.S. and European centres.

The Center for Electronic Commerce at the University of Texas, Austin has conducted a number of research studies on the size and nature of the digital economy. It has acted as a focus for industry-funded research from firms such as Dell and Cisco. Leading figures are Anitesh Barua and Andrew Whinston.

The e-Lab at Vanderbildt University is led by pioneer research workers Donna Hoffmann and Thomas Novak. It claims sponsorship by over two dozen firms and performs surveys, experimental work and helps firms integrate the Internet into their business strategies.

The Center for e-Business at MIT lists an impressive array of industry sponsors and claims to perform academically rigorous work in areas such as benchmarking, best practices and case analysis. It also provides executive round tables and lecture series. Well known academic participants from MIT faculty are Erik Brynjolfsson, Michael A. Cusumano and Thomas W. Malone.

Centres at European and other non-U.S. Universities are less well funded. However interesting examples are those at Cardiff, de Montford, Nottingham, St. Gallen, Erasmus and McMaster.

A list of other academic e-commerce research centres can be found at:
http://dmoz.org/Business/E-Commerce/Education/Centers/

5. Critical research issues

Identification of key research issues in a new field of inquiry is a task to be approached with some care. When economic, business and political conditions are subject to rapid changes, the importance of research agendas for funding and resources can shift quickly. Therefore it is with some caution that a list of significant issues in e-business and its strategic management is presented below. This list has been derived from apparent trends in the literature between about 1995 and 2002, as well as from the author's experience of teaching, research supervision, consultation and dialogue with practitioners.

Some issues listed are not well represented in the published literature, for example governance, ethics and aspects of organisational change. However, they are included because, in the light of experiences such as the Enron and Marconi failures and present economic conditions, they are likely to become a focus for future work. Each issue has been phrased as a question under one of ten themes, as shown in Figure 1:

1. The Importance and Implications of e-Business:
   - I. How large is the Internet economy?
   - II. What is the structure of the Internet economy?
   - III. What is the significance of cultural factors on Internet adoption and usage?
   - IV. How will e-business impact on society, lifestyles and consumer behaviour?
   - V. What will be the effects of the Internet on macroeconomic growth?
   - VI. How will e-business affect regional economic development?
   - VII. How will the Internet affect national competitive advantage?
   - VIII. How will the Internet influence international trade?

2. The Growth and Development of e-Business:
   - I. Why has e-business been slow to take off in many sectors?
   - II. What are the barriers to adoption of e-business for firms of different types?
   - III. What are the factors enabling the adoption of e-business?
   - IV. What should be the role of government in stimulating growth of
   - V. e-Business?
   - VI. What makes an effective business incubator?
   - VII. What are the causes for failure in dot.com firms?

3. The Economics of e-Business:
   - I. How does the Internet improve economies of scale and scope?
   - II. What are the effects of lower transaction and search costs?
   - III. How important are so-called network effects and 'lock-in'?
   - IV. Does the Internet reduce the costs of business? Raise efficiency?
   - V. How will supply chain efficiencies improve?
   - VI. How can the Internet help create new markets and customer value?

4. Opportunity Identification:
   I. Which industries and industry sectors present the most promising
   II. Opportunities for e-business?
   III. What methods should be used to identify, analyse and evaluate
   IV. e-Business opportunities?
   V. What are the major domains in which traditional businesses should
   VI. Look for opportunities to exploit new digital technologies?
   VII. How can businesses redesign their value chains and value networks
   VIII. Using new technologies?
   IX. Which new digital marketplaces will prove viable in the longer term?
   X. How should investors value new Internet business ventures?

5. Business Model Analysis:
   I. How can the concept of a business model be defined?
   II. What is the value of the business model concept?
   III. What are useful typologies and classifications of Internet business models?
   IV. What wholly new business models does the Internet help create?
   V. What are important success factors for different types of Internet business
   VI. Models?
   VII. How should traditional firms embrace Internet business models?
   VIII. What techniques are available to analyse and assess business models?
   IX. How can firms price and charge for digital content and services?
   X. How should digital content and services be bundled?

6. Strategy in New Economy Firms:
   I. What is the importance of first mover advantage?
   II. How does the Internet increase competitive rivalry?
   III. What types of new competitor does the Internet help create?
   IV. How can firms defend or build competitive advantage using the Web?
   V. How should marketing strategies be adapted to the Internet?
   VI. What strategic resources and competencies do e-business firms need?
   VII. How do generic competitive strategies differ in nature and implementation
   VIII. In an e-business environment?
   IX. What makes for a successful business alliance or partnership in the digital
   X. Economy?
   XI. What are the strategic options for traditional firms wishing to embrace e-
   XII. Business?
   XIII. What new approaches to strategic management are needed?
   XIV. How can intellectual property and personal information be protected?

7. Organisational Change and e-Business:
   I. Which leadership styles are most effective in Internet businesses?
   II. What new management competencies must be developed?
   III. What will be the impact of e-business on organisational structures?
   IV. How can the Internet support increased collaborative and team working?
   V. What are the impacts for organisational learning and knowledge
   VI. Management?
   VII. In which ways will individuals need to adapt their work styles?

8. Managing Internet Technologies
   I. How should disruptive technologies be managed?
   II. How can technology and business strategies be linked?
   III. How do electronic agents and similar software affect consumer behaviour?

9. Small and Medium Size Business:
   I. Does the Internet represent opportunity or threat to SMEs?
   II. What are the barriers to SME exploitation of the Internet?
   III. How can SMEs exploit e-business?

10. Governance and Ethics:
   I. Are issues of corporate responsibility different in Internet firms?
   II. Are there issues of environmental sustainability for e-business firms?
   III. Should B2B exchanges be regulated? If so, how?

Figure 1: Significant e-Business issues

6. Methodologies

Since the growth of businesses that use the Internet as a core infrastructure is a very recent phenomenon, it is hardly surprising that much investigation in the literature to date is of an exploratory nature. Theory building has taken place at the intersection of:

- Case study
- Extrapolation of known characteristics of the technology to business settings (e.g. reach, interactivity)
- Extrapolation of existing theories of strategy, marketing, psychology, economics and complex systems (e.g. network effects, increasing returns)

An example is the work of Ghosh (1998), which builds on characteristics of the Internet to derive a new construct he terms ‘navigation’ that he presents as being central to competitive advantage and success.

Many academic empirical investigations and surveys in e-business have suffered from small

sample sizes, with consequent questions as to the meaning, validity and reliability of findings. Many case studies have also been prepared more for descriptive and teaching purposes rather than to trigger theory building or investigation. Examples have often been chosen because a firm appears frequently in the press or popular journals. There has also been a notable absence of longitudinal case study designs, or of well structured multiple case study designs. Some online case studies are presented in the reference section at the end of the paper.

As with much previous information systems research, a commercial influence on research agendas is evident. This is a double edged-sword in that corporate involvement helps provide necessary funding and access to data at the potential expense of objectivity and requirements for confidentiality.

7. Analysis

To identify gaps in the present literature and to highlight opportunities for future work the literature referenced at the end of the paper was reviewed and mapped on to the list of questions in Figure 1. The result is shown in Figure 2. Readers should note that in this Figure each reference has not only the date of the publication but reference to the sub question in small roman numerals listed in the relevant section of Figure 1. The following commentary on Figure 2 is in order:

Despite the apparent lack of publication on the importance and implication of e-business, there has been much work in this area. For example the Center for Electronic Commerce at the University of Texas has published a number of reports and books on the 'Internet Landscape.' This topic is also frequently the subject of research by government departments, agencies and international organisations such as the OECD. Web sites such as Cyberatlas.com publish regular updates as to Internet usage and uptake of e-Commerce.

The literature on organisational change and e-business also appears to be sparse. However there is a large body of related literature on technology and change, virtual organisations, organisational development and restructuring that was not addressed in this analysis. This can be found in well-known journals such as the Academy of Management Review and Journal, Organizational Dynamics and Organization Science.

There is a surprising lack of literature on governance and corporate social responsibility in e-business. This may be due to a perception that concerns of e-businesses are not unique in this area and are the same concerns as those of any other business. The Enron collapse is currently under investigation, but it is clear that many more factors than a faulty e-business model contributed to this mammoth corporate failure. It is not clear yet whether e-businesses that cause a redesign of existing supply chains and distribution systems may harm or improve the environment through their impacts on transportation systems.

I. The Importance and Implications of e-Business:
Quelch & Klein (1996, viii)

2. The Growth and Development of e-Business:
Chen & Leteney (2000, iii), Hansen (2000, v), Kotha et. al. (2001, iii), Lee & Wang (2001, ii)

3. The Economics of e-Business:
Berthon et. al. (1996, vi), Carlton (2001, v), Clay (2001, ii), Evans & Wurster (1997, i, ii, iii, iv), Garicano (2001, ii), Hoffman & Novak (2000, vi), Scott Morton (2001, iv, vi)

4. Opportunity Identification:
Alba et. al (1997, vi), Barua et. al. (2001, iv), Benjamin & Wigand (1995, v), Burke (1997, iii), Evans & Wurster (1999, iii), Feeny (2001, iii, iv), Ghosh (1998, iii), Kaplan & Sawhney (2000, v), Ordanini & Pol (2001, v), Rayport & Sviokla (1995, iv), Rayport & Sviokla (1994, iii), Rosen & Howard (2000, i), Scott Morton (2001, i), Wise & Morrison (2000, v)

5. Business Model Analysis:
Armstrong & Hagel (1996, v), Barua et. al. (2001, vi), Benjamin & Wigand (1995, iv), Dutta & Segev (1999, iv), Evans & Wurster (1999, iv), Goolsbee (2001, vi), Kaplan & Sawhney (2000, iv), Keh & Shieh (2001, v), Klein & Quelch (1997, iv, vi), Kotha (1998, iv, v), Mahadevan (2000, i, ii, iii, iv), Rayport (1999, i, ii, iii, iv), Rayport & Sviokla (1994, iv, vi), Timmers (2000, i, ii, iii, iv), Werbach (2000, v), Willcocks & Plant (2001, vi), Wise & Morrison (2000, iv)

6. Strategy in New Economy Firms:
Alba et al. (1997, v). Barua et. al. (2001, ix), Benjamin & Wigand (1995, viii), Benoy et. al. (2001, v), Daniel & Klimis (1999, ii, iii, iv), Eisenhardt (1999, ix, x), Eisenhardt (1998, iv, x), Gertner (2001, ii, iv), Ghosh (1998, iv), Goolsbee (2001, ix), Gulati & Garino (2000, ix), Harvey et. al. (1998, v), Hoffman & Novak (2000, v)Hoffman & Novak (1996, v), McWilliam (2000, v), Ordanini & Pol (2001, iv), Petersen et. al. (1997, v), Pitt et. al. (1999, v), Porter (2001), Quelch & Klein (1996, v), Rangan & Adner (2001, iv), Reichfeld & Shefter (2000, iv), Rosen & Howard (2000, ix), Venkatraman (2000, iv), Yoffie & Cusumano (1999, iv, x)

7. Organisational Change and e-Business:
   Dutta & Segev (1999, iii), Eisenhardt (1999, ii)

8. Managing Internet Technologies
   Day & Schoemaker (2000, i), Luftman & Brier (1999, ii), Short & Venkatraman (1992, ii), Smith (2001, iii)

9. Small and Medium Size Business:
   Kleindl (2000, i, ii, iii), McDonagh & Prothero (2000, i, ii, iii), Steinfeld & Whitten (1999, i), Webb & Sayer (1998, i, ii, iii)

10. Governance and Ethics:
    N/A

Figure 2: Gaps in the literature and opportunities for further research

8. Conclusions and future directions

In conclusion, there is an emerging literature on e-business, which as is to be expected, is mixed in quality and degree of academic rigour. There are many opportunities for further publication and PhD research.

There are a number of potential future research areas that can be identified from study of Figure 2:

8.1 E-Business and international management

The impacts of the Internet on trade and the importance of cultural factors appear to be areas ripe for investigation.

8.2 The impacts of the Internet on SMEs

E-business is frequently presented as an opportunity for smaller businesses to expand geographically and even to globalise. However Internet technologies also allow larger competitors to acquire the much-vaunted characteristics of smaller firms, i.e. flexibility, customer intimacy and focussed business strategies. In which sectors is the Internet an opportunity for SMEs? In which sectors is it a threat? There is also much scope for investigation of the effectiveness and management of the large number of business incubators that have been established to help grow e-business firms.

8.3 Business models

Much of the literature on business models discusses the concept of a business model in terms of a customer value proposition, pricing strategy or particular Internet technologies. There is an opportunity for business model analysis from a more holistic perspective. The concept of a business model and its use within strategic management also needs to refined and argued to address the criticisms raised by Porter (2001).

8.4 Evaluation of E-Business models

The topic of valuing Internet businesses is one of major concern to bankers, venture capitalists, institutional and private investors. Although there is work that has been done and published in the finance literature, there would be appear to be scope for work also to be done in the e-business and strategy field linked to study of business models.

8.5 Organisational change and E-Business

There are a number of topics under this heading that appear worthy of further study. These include the leadership characteristics required to manage in hypercompetitive and 'fast' environments, use of Internet technologies for collaborative working and principles for the design of organisational structure in a networked environment.

8.6 Governance and ethics

As indicated earlier, there are likely to be issues such as environmental sustainability that will become increasingly important in future years. There is scope for multidisciplinary study.

Although this paper has taken a broad approach and attempted to address the more serious literature in e-business, it must be acknowledged that it represents to significant degree the author's experiences and opinions.

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The Journal of Computer Mediated Communication http://www.ascusc.org/jcmc/

Research centres

The Center for Electronic Commerce at University of Texas, Austin: http://cism.bus.utexas.edu/

The e-Lab at Vanderbildt University: http://ecommerce.vanderbilt.edu/

The e-commerce forum at MIT: http://ecommerce.mit.edu/forum/

The Center for e-Business at MIT: http://ebusiness.mit.edu/

The e-Business Center at Berkeley, California: http://haas.berkeley.edu/~citm/

The e-commerce innovation centre at Cardiff: http://www.ecommerce.ac.uk/netcom.html

The e-business research centre at McMaster University: http://merc.mcmaster.ca/

The Cyber business centre at Nottingham University: http://www.nottingham.ac.uk/cyber/

St. Gallen University in Switzerland: http://www.mcm.unisg.ch/

Erasmus University in Holland: http://www.euridis.fbk.eur.nl/

E-Commerce case studies

The Dutch Flower Auctions http://www.stern.nyu.edu/~akambil/teaching/cases/auction/flowers.html

A number of case studies at the Cardiff e-Commerce centre http://www.ecommerce.ac.uk/case.html

Constructing a Theory of 'IS Business Value' from the Literature

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1. Introduction

The purpose of this paper is to draw attention to an innovative use of literature in social science research where the literature may not only be seen as a secondary source of data (Strauss & Corbin 1990) but may also serve as the basis for theory building (Lewis & Grimes 1999; Saunders et. al. 1999). This will be exemplified by attempting to construct a theory of 'IS business value' from the literature.

To meet this goal, first a very brief analysis will be undertaken of literature usage in social science research, highlighting the paucity of theory development. Next, current uses of the literature for theory development will be examined. Then the important role of definitions derived from the literature will be highlighted, before the focus shifts to meta-triangulation, a method that facilitates theory construction based on the literature. In the final section, the way meta-triangulation was used to help create a theory of 'IS business value' is described.

2. Usual uses of the literature

Current usage of existing literature in social science research is extensive ranging from simply gaining a knowledge of the 'state of the art' to the development of conceptual frameworks to direct research. The range of uses of the literature base includes, to:

- provide the bases of argument (Clark 1986);
- provide an overview of the state of the art, including best practice (Clark 1986);
- identify the gaps in the body of knowledge (Zikmund 1997);
- resolve apparent contradictions;
- stimulate theoretical sensitivity via knowledge of philosophical writings and existing theory (Strauss & Corbin 1990);
- direct theoretical sampling (e.g. provide ideas of where you might go to uncover phenomenon);
- provide supplementary validation (Strauss & Corbin 1990);
- unearth research questions (Strauss & Corbin 1990); and
- place interpretations on the literature by using it as a secondary source of data (i.e. where the literature is grouped and given conceptual labels).

Even though Strauss & Corbin (1990) suggest that the literature may serve different purposes dependent upon whether the type of research being conducted is quantitative or qualitative, there are a number of purposes that these two categories of research have in common, including, to:

- identify previous research in the area;
- discover gaps in understanding;
- derive theoretical and conceptual frameworks to guide research and interpret the findings; and
- delineate important variables and suggest relationships between them.

A specific purpose suggested by Strauss & Corbin (1990) for investigators using quantitative methods:

- testing relationships among variables or determining how they cluster.

Strauss & Corbin (1990) also suggest that in qualitative, exploratory research the emphasis is on the discovery of relevant categories and relationships between them, and putting them together in new rather than standard ways. In these instances, they believe that qualitative researchers seek to explain phenomena in light of theoretical frameworks that often evolve during the research itself. Alternately stated, the focus is more on the development of mind maps such as new classification models of the body of knowledge, showing how concepts can be grouped or clustered together according to schools of thought or themes without necessarily considering the relationship between groups.

Whilst the use of the literature may or may not be dependent upon the type of research, it is not common to see theory building as an intended outcome of a literature review. It is this observation that prompted the writing of this paper.

In the past, there was a widely held view (especially by positivist-oriented researchers) that the social sciences were characterized by a certain vagueness and unclear thought which is a result of ambiguous and invalid conceptualisation (e.g. Direnzo 1966). One possible reason for this was that there had been relatively little concern for the role of conceptualisation in theory construction. However, Parsons highlights the importance of theoretical and philosophical conceptualisation: 'science is not common sense, and its most basic theoretical ideas and frames of reference require development through complex intellectual processes which involve not only interpretations of observations but also theoretical and partly philosophical conceptualisation' (in Bagozzi 1984). In a similar vein Meuller (1997) draws attention to the importance of the literature as a basis for the construction of sound theoretical models.

Nevertheless, it has been suggested that theoretical issues are often introduced merely as a background for empirical analysis (Babbie & Wagenaar 1992), and in other studies, selected empirical data is cited simply to bolster theoretical arguments. In neither case is there really any interaction between theory and research for the purpose of developing new explanations. Additionally, many studies make no use of theory at all. Table 1.1 presents the findings of a now rather dated study by Wells and Picou (1981) (in Babbie & Wagenaar 1992) that demonstrated the limited use of theory in social science literature twenty years ago. In the absence of recent evidence to the contrary, it is assumed that a similar situation still prevails.

Table 1: How theory was Utilized in American Sociology Research, 1936-78

Primary Theory Utilization	**Percent**
Not theoretically related research	35.8
Theory used to support authors ideas	1.9
Theory is used to focus research problem	3.3
Concepts are used to discuss and interpret findings	20.8
Theory is used to discuss and interpret findings	0.9
Modification or extension of existing theory	4.5
Development of theory	2.1
Theory is used to develop testable hypotheses and findings support the hypotheses	22.5
Theory is used to develop testable hypotheses and findings refute the hypotheses	2.5
Unfavourable discussion of theory	2.7
Favourable discussion of theory	3.0
TOTAL	100

Source: Wells & Picou (in Babbie & Wagenaar 1992)

However, as already discussed, theory has an important role to play in research: 'empirical research without theory produces a series of anecdotes' (Walsham 1993, p. xiii). As a discipline is considered to be mature if it has developed a solid foundation of relevant theory (Direnzo 1967), it is suggested that information systems research should have sound theory construction as a major goal. It is suggested that theory building using the literature as a source of data is a step in the right direction for our discipline. To this end the following section deals with the issue of theory construction as it pertains to the literature.

3. Theory building from the literature

The theory-building tool that is the focus of this paper is that of meta-triangulation. Meta-triangulation is a process of building theory from multiple paradigms roughly analogous in its processes to traditional (i.e. single-paradigm) triangulation (Saunders et al. 1999). Laying the groundwork for meta-triangulation requires defining the phenomenon of interest, focusing paradigm lenses, and collecting a meta-theoretical sample. As in traditional induction, this initial phase delineates boundaries that both constrain and enable theory building (Eisenhardt 1989). In the following section the importance of definition is emphasised and used to introduce the meta-triangulation methodology.

3.1 Definition

Sound definition is the first step in theory building. Whilst deriving definitions from the literature is not theory building in a traditional sense, it serves as the basis for subsequent theory building in that theories are explanatory statements (involving definition), which are devised as descriptions and interpretations of the findings of scientific investigation (Direnzo 1967). In other words definitions are components of theories.

A definition according to Aristotle 'is a phrase signifying the essence of a thing'. By essence

is meant the set of fundamental attributes which are the necessary and sufficient conditions for any concrete thing to be a thing of that type (Direnzo 1967). In this approach, definition is considered synonymous with the term concept. Concept usually means a 'rational representation of universal application which comprehends the essential attributes of a class or logical species of phenomena' (Direnzo 1967, p. 13). Thus the function and purpose of definition is to 'lay bare the principal features or structure of a concept, partly in order to make it definite, to delimit it from other concepts, and partly in order to make possible a systematic exploration of the subject matter with which it deals' (Direnzo 1967, p. 14).

There are three kinds of definition of a construct: real, nominal and operational. A real definition is a statement of the 'essential nature' or characteristics of some entity. Real definitions tend to be somewhat vague unless they have been subjected to the rigor of some hermeneutical method such as holistic construal. A nominal definition is assigned to a term as a working definition for the purpose of inquiry. An operational definition is a description of the operations that will be undertaken in the measuring of the concept (Direnzo 1967, p.14). The conceptual order is demonstrated in figure 1.

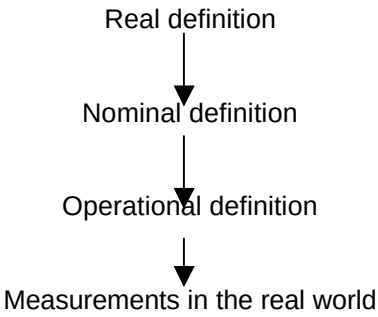

Figure 1: Conceptual Order
(Source: Adapted from Direnzo 1967, p. 14)

The three definitions, if grounded in the literature, can reduce the vagueness and unclear thought, associated with social science research. In addition, definition is important for subsequent theory building and thus is relevant to the following discussion of meta-triangulation, as the first step in meta-triangulation is to define the phenomenon of interest.

3.2 Theory building via meta-triangulation

Meta-triangulation is a literature synthesis approach that culminates in theory construction (Saunders et al. 1999). The approach seeks to identify the paradigms underlying extant theory and use the uncovered multiple paradigms to create an even richer theoretical basis for understanding the phenomenon being studied.

Meta-triangulation is a process by which theory is built by the application of multiple paradigm lenses to the literature or to data collected about a given phenomenon. It is also termed multi-paradigm research (Lewis & Grimes 1999). Multi-paradigm theorists consider paradigms as heuristics that may help scholars explore theoretical and organizational complexity and extend the scope, relevance, and creativity of existing theory.

As summarised by Lewis and Grimes (1999), in multi-paradigm reviews researchers seek to reveal the impact of theorists' underlying, and often taken-for-granted, assumptions on their understandings of the research topic. An attempt is made to differentiate among varied sets of assumptions, making differing assumptions explicit, thereby delineating paradigm distinctions and aiding awareness, use, and critique of alternative perspectives.

Whilst Lewis and Grimes (1999) suggest the addition of a multi-paradigm research phase, which moves beyond review of existing literature to apply divergent paradigm lenses empirically, Saunders treats the literature as the data source. Both methods culminate in a theory building stage described by Lewis and Grimes (1999) as meta-paradigm theory building.

Meta-paradigm theory denotes a higher level of abstraction, from which 'accommodation' does not necessarily imply unification or synthesis but, instead, the ability to comprehend paradigmatic differences, similarities, and interrelationships (Gioia & Pitre 1990). The goal is a richer, more holistic, and contextualised understanding. Meta-theorizing techniques help theorists explore patterns that span conflicting understandings.

In both approaches to meta-triangulation (i.e. Lewis & Grimes 1999; Saunders et al.) the proposed methodology consists of three phases: data collection, data analysis and theory construction. In Saunder's (1999) methodology data collection includes an initial review of the literature related to the phenomenon, a focusing of the paradigm lenses and collection of the metaphysical sample (e.g. journal articles and conference proceedings). As mentioned above, in the meta-triangulation strategy devised by Lewis and Grimes (1999), the metaphysical sample

is extended to additional data collection. In each approach data analysis includes multiple paradigm coding, grouping and categorizing. The coding, grouping and categorizing is performed in a similar fashion to that of traditional qualitative data analysis. The culminating theory building stage consists of attempts to arrange the emergent patterns into a framework or theory.

Denzin's (1978) depiction of theoretical triangulation helps conceptualise the process. The phases he proposed approximate multi-paradigm approaches: initial groundwork to define the theoretical perspectives to be used (multi-paradigm review), data analysis using each lens in turn (multi-paradigm research), and theory building to contrast and account for differing interpretations of the data (meta-paradigm theory building). Denzin (1978) claimed this process challenges theorists to purposefully seek out, rather than avoid or ignore, conflicting interpretations.

The deficiency in Saunders et al.'s (1999) approach appears to be in the final theory building stage as no methodology or guidelines are provided to implement this stage. It is suggested that application of the holistic construal methodology initially designed by Bagozzi (1984) would be a worthy addition to the theory building stage of meta-triangulation. Cronk (2000) exemplified the holistic construal method of theory construction as it was applied to aid the understanding of the 'IS business value'.

4. 'IS business value' theory using meta-triangulation

Guided by meta-triangulation thinking, the 'IS business value' literature from various disciplines was collected and analysed. However, as suggested by Smircich (1983) recognizing an author's paradigm may be an arduous and arguable task. He noted that not only do authors rarely state their paradigm but, often, make the choice unconsciously. In this example it was difficult to differentiae between critical theory and relativism paradigms as both dealt with constructed view of reality to some extent. However, the paradigm lenses were focused to include four major paradigms:

- positivist paradigm reflected in quantitative economic/financial perspectives on value;
- realism as indicated by the combination of multiple perspectives on value and hence measurement type;
- critical theory as indicated by context specific measures of value; and
- constructivism reflected in perceptual perspectives of value.

Definitions of these paradigms are provided in Table 2.

Table 2: Basic Belief Systems of Alternative Inquiry Paradigms

	Positivism	*Realism (or post-positivism)*	*Critical Theory*	*Constructivism*
Ontology	naï ve realism: 'real' reality and thus is apprehensible	critical realism: 'real' reality but only imperfectly and probabilistically apprehensible. Thus triangulation of many sources is necessary to 'know' it	historical realism: 'virtual' reality shaped by social, political, cultural, economic, ethnic, and gender values, crystallized over time	relativism: multiple local and specific 'constructed' realities
Epistemology	objectivist: findings true	modified objectivist: findings probably true	subjectivist: value-mediated findings	subjectivist: created findings
Methodology	experiments/ surveys: manipulative; verification of hypotheses; chiefly quantitative methods	experiments/surveys/ case studies: manipulative; falsification of hypotheses; may include qualitative methods	dialogic/dialectical: a dialogue between researcher and subjects that transforms the social situation	hermeneutical/ dialectical: interaction between researcher and subjects to distill a more informed consensus

(Source: adapted from *Guba & Lincoln 1994, p. 109; Perry et al. 1997, p. 551*)

Collection of what Saunders et al. (1999) termed the 'meta-theoretical sample' included data from journal articles, conference proceedings and books. Following Saunders et al. (1999), the literature was coded and grouped according to the paradigm/underlying assumptions. Further sub-coding was conducted for example categorising paradigms

further by level of measurement (organisational, intermediate and system levels). Level of measurement also suggests underlying assumptions about the way value is accrued in an organization. For example, some see value as a contribution to the organisation's bottom line. Alternately stated, if an investment is valuable it will make a difference to organisational performance (however that is measured).

Table 3: The multi-paradigms of 'IS business value'

PARADIGM	**MEASUREMENT APPROACH**
Positivist	
Sub-Paradigm	***Quantitative Organizational Level Measure*** **Financial/economic** - *Simple Financial* - IS factor (eg. annual IS expenditure) vs some organizational performance measure (eg. Pre-tax profit) *Data Envelope Analysis* - converts multiple input measures and multiple output measures into a single measures of relative efficiency *Resource View* - labour and IS considered jointly and treated as a resource - deployment issue
Sub-Paradigm	***Quantitative System Level Measures*** **Financial** *Cost/benefit* **Non Financial** *System Usage*
Sub-Paradigm	***Quantitative Intermediate Level*** *Process Enhancement*
Critical Theory	
	Qualitative/ Perceptual Measures of Value **Perceived Fulfillment of Objectives** - Fulfillment of system objectives - Fulfillment of organisational objectives - Value Analysis - Organisational impact - **Value perceived as***:* - System quality, Information quality, User satisfaction, - User information satisfaction, Individual impact. - Usefulness - System flexibility, System responsiveness, System functional integrity - Value of information processed - Value to the stakeholder Service quality- improved client services, servqual instrument Benefit of System and System Goals, nature of system benefits Benefits - Alignment with Business Strategy
Realism	
	Multi-Dimensional/Business Perspective Measures - ComputerWorld Index Balanced scoreboard..... - IS value as a measure of business contributions..... - Enterprise level measurement, IS impact on contact with customers - Information economics..... - Business value linkage .....
Historical Relativism	
	Multi-dimensional Qualitative Measures Context, content and process

Source: Adapted from Cronk and Fitzgerald (1999)

Other paradigms view value as unmeasurable at the organisational level due to issues of collectivity. Paradigms were then grouped, and tabulated with an accompanying evaluation of the paradigm. Table 3 summarizes the results of this analysis.

Competing paradigms (Guba & Lincoln 1994, p.116) are seen as different theoretical perspectives, or different ways of accessing the phenomenon under study. From this alternative realm of abstraction, each paradigm is seen as contributing a layer of meaning. Hence all the paradigms are viewed as being a valid portion of the holistic 'IS business value' picture, that is, of the theory of 'IS business value'.

It is suggested that the meta-triangulation approach described by Saunders et al. (1999), and applied here to 'IS business value' literature, reflects the inductive approach to theory building where the theory is constructed by looking for, and analysing, significant patterns in the literature, involving the following four steps:

- selecting a phenomenon and identifying all its concepts;
- assessing all theses concepts in a variety of situations;
- analysing the resulting literature in order to identify any recurring patterns of interest; and
- the patterns constitute the emerging theory, which is then subjected to further research.

These steps can be undertaken using the literature as data where a substantial literature base exists to provide the various situations, concepts and paradigms for use as the data. The ultimate goal of these inductive methods of theory building is to create a theoretical explanation by specifying phenomena in terms of '... conditions that give rise to them, how they are expressed through action/interaction, the consequences that result from them, and variations of these qualifiers' (Corbin & Strauss 1990, p. 7). Further analysis can be performed to further model 'IS business value' in these terms (e.g. Cronk 2000).

5. Conclusion

The meta-triangulation process is considered an extension of traditional strategies aimed at enhancing the potential insights available from existing literature, data, and theorists' intuition (Lewis & Grimes 1990). Meta-triangulation follows many of Weick's (1989) prescriptions for building theory using 'disciplined imagination,' deliberately and dramatically increasing the quantity and diversity of literature reviewed, of analytical methods used, and of conjectures examined.

Applying meta-triangulation to 'IS business value' facilitates a shift from a simplistic towards a richer, more contextualised and multidimensional theory. This paper has argued that multi-paradigm inquiry holds considerable, and largely unmet, potential for extending existing understandings of complex and paradoxical phenomenon such as 'IS business value' where competing paradigms have tended to confuse measurement of the construct in the real world.

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Co-operative Inquiry: Reflections on Practice

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Co-operative inquiry (CI) is a form of action research which emphasises participation. This paper discusses CI as a research methodology. An overview is given and then greater detail is provided using as a vehicle my use of CI in a particular research study. This study explored whether conventionally-educated systems developers could adopt a richer model of organisations by using metaphors for organisations as cognitive structuring devices. Finally some reflections are given on the challenges CI poses for both individual researchers and the wider academic community.

Keywords: co-operative inquiry, information systems development, metaphors

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1. Introduction

Researchers often have to enter into the complicated, messy, unstructured situations of the organisations they wish to study. Action research is one possible approach. It involves the researchers taking action in an organisation, seeking practical outcomes as well as theoretical ones, and reflecting on both the process and the product (Baskerville, 1999; Baskerville & Wood-Harper, 1998; Baskerville & Wood-Harper, 1996; Checkland, 1991; McNiff, 2000; Reason & Bradbury, 2001). Researchers also often have to collaborate with the people in the organisations. However, working with others brings problems of power: who designs the research, interprets the data and assesses the findings' validity? As Brechin writes:

> *"Research tends to be owned and controlled by researchers, or by those who, in turn, own and control the researchers. Those who remain powerless to influence the processes of information gathering, the identification of truth, and the dissemination of findings are usually the subjects of the research, those very people whose interests the research may purport to serve." (Brechin, 1993, p. 73)*

Many academic researchers also collaborate with their students on research projects, for example postgraduates try out their supervisors' theories in real-life organisations, as, for example, in the action research which developed SSM (Checkland, 1981; Checkland & Holwell, 1998; Checkland & Scholes, 1990; Checkland & Jenkins, 1974) However, working with students brings further problems of power: does the students' lower status militate against authentic collaboration, and how do academics guard against students reporting outcomes favourable to an academic's favoured theory or methodology in the hope of gaining approval and better assessment grades?

Co-operative inquiry (CI) is a form of action research which emphasises participation: *all* those involved contribute to the decisions about what is to be looked at, the inquiry methods to be used, the interpretation of what is discovered and the action which is the subject of the research. It is research *with* people, not *on* or *about* people (Heron, 1996; Heron & Reason, 2001; Reason, 1988d, 1994c; Reason & Heron, 1999). This paper discusses CI as a research methodology. An overview of CI is given. Further details are then provided, using as a vehicle my use of CI in a particular research study which involved collaboration with student researchers. Finally some reflections are given on the challenges CI poses for both individual researchers and the wider academic community.

2. Overview of co-operative inquiry

CI is a kind of action research, aimed at acquiring knowledge about *human experience* through action and joint reflection. The most comprehensive guide is Heron (1996). (Additional sources include Heron & Reason, 2001; Reason, 1994b, 1988d, 1994c; Reason & Bradbury, 2001; Reason & Heron, 1999; Reason & Rowan, 1981.) In its fullest form the researcher-subject distinction disappears and all participants are both co-researchers and co-subjects. Its defining features are (Heron, 1996, pp. 19-20):

- All subjects are as fully involved as possible as co-researchers in decisions about both content and method.
- There is interplay between reflection and action.
- There is explicit attention to the validity of the inquiry and its findings.
- There is a radical epistemology for a wide-ranging inquiry method.
- There is a range of special skills suited to such all-purpose experiential inquiry.
- The full range of human sensibilities is available as an instrument of inquiry.

It involves two complementary kinds of participation: *political* participation (concerning the relation between people in the inquiry and the decisions that affect them) and *epistemic* participation (concerning the relation between the knower and the known).

The arguments for political participation are (Heron, 1996, p. 21):

- People have a right to participate in decisions about both the method and conclusions in research that seeks to formulate knowledge about them.
- It gives them the opportunity to express their own preferences and values in the research design.
- It empowers them to flourish fully as humans in the study, and be represented as such in its conclusions, rather than being passive subjects of the researchers.
- It avoids their being disempowered, oppressed and misrepresented by the researchers' values that are implicit in any unilateral research design.

The arguments for epistemic participation are (Heron, 1996, pp. 20-21):

- Propositions about human experience are of questionable validity if they are not grounded in the researchers' experience.
- The most rigorous way to do this is for researchers to ground the statements directly in their own experience as co-subjects.
- Researchers cannot get outside, or try to get outside, the human condition in order to study it. They can only study it through their own embodiment, in joint participation and dialogue with others who are similarly engaged.
- This enables researchers to come to know both the external forms of worlds and people and also the inner feelings and modes of awareness of these forms.

CI criticises quantitative, positivist research *on* people (Heron, 1996, pp. 25-26). Such research ignores the human right of people to participate in decisions about gaining knowledge of them (i.e. a lack of political participation). It produces knowledge that is not experientially grounded: the researchers are not involved in the experience examined by the research, and the 'subjects' are not involved in the selection of the constructs which are used to make sense of their experience (i.e. a lack of epistemic participation). Qualitative, interpretive research *about* people is also criticised where the research is designed and interpreted unilaterally by the researcher. However, interpretive researchers do include some participation if they seek to validate their account with their 'respondents'. Interpretive researchers can also be partially participant (in the epistemic sense) if they do fieldwork involving participant observation. Often, however, decisions about what data to gather and the interpretive models used are not decided jointly with the subjects. Hence qualitative research *about* people is seen as a halfway house between exclusive, controlling research *on* people and fully participatory research *with* people (Heron, 1996, pp. 26-30).
CI recognises at least four different types of knowledge (Heron, 1996, pp. 52-58; Heron & Reason, 2001; Reason, 1994a, pp 42-46):

- *Experiential knowledge* – gained by direct encounter; almost impossible to put into words, being tacit and based on empathy, intuition and feeling.
- *Presentational knowledge* – emerges from experiential knowledge; gives the first expression of knowing something, through stories, drawings, sculpture, music, dance etc.
- *Propositional knowledge* – 'about' something in the form of logically organised ideas and theories, as in most academic research.
- *Practical knowledge* – evident in knowing 'how to' exercise a skill.

These four different ways of knowing, and skills for acquiring them, are the 'extended epistemology' of CI – going beyond the theoretical, propositional knowledge recognised by traditional academic research.
The purpose of a co-operative inquiry can be (Reason, 1988b, pp. 221-2):

- Development of professional practice (e.g. Traylen, 1994: health visitors inquiring into their relationships with their clients).
- Liberation of disadvantaged groups (e.g. Whitmore, 1994: single mothers inquiring into the effectiveness of a pre-natal education programme).
- Exploration of human experience (e.g. Heron, 1988: a group of people inquiring into altered states of consciousness).
- Institutional change and development (e.g. Marshall & McLean, 1988: employees of a local authority inquiring into its culture).
- Development of theory (e.g. Reason, 1988c: conventionally-trained medical practitioners inquiring into the theory and practice of holistic medicine).

Any inquiry will emphasise some of these purposes more than others.
The process of CI is an iterative cycling by a group of people between phases of reflection and action (Heron, 1996; Reason, 1994c; Reason & Heron, 1999):

- *Stage 1*. A group of co-researchers meet to explore an agreed area of human activity. They agree the research focus, develop research questions or propositions for exploration, agree to undertake some action which will contribute to the exploration and decide upon a method for recording their experiences. (A reflection phase.)
- *Stage 2.* The co-researchers now become co-subjects, carrying out the agreed actions and observing and recording the process and outcomes of their own and each other's experiences. (An action phase.)
- *Stage 3.* The co-subjects become fully immersed in and engaged with their experience. They may break through into new awareness and creative insights, or become so involved that they lose their awareness of being part of an inquiry group and metaphorically 'fall asleep', reverting to ordinary rather than heightened consciousness. (An action phase.)
- *Stage 4.* The co-researchers meet again to re-consider their original questions and propositions in the light of their experiences. They might modify, develop or re-frame them, reject them or pose new questions. (A reflection phase.)

In my discipline, information systems, there has been limited use of CI. Moggridge and Reason (1996) briefly describe how it underpins student systems development group projects for local community organisations, with a focus on mutual learning by all participants. Alexander (1999) discusses CI's potential applicability in requirements engineering. Peppard et al (2000) used it as part of their research strategy to define a set of 'information competencies'. My use is discussed in the next section.

3. The co-operative inquiry method in use

This section explains CI in greater detail, using as a vehicle my use of CI in a particular research study.

3.1 Purpose of inquiry

The objective was to explore whether conventionally-educated systems developers could adopt a richer model of organisations by using metaphors for organisations, derived in the main from Morgan (1986; 1993), as cognitive structuring devices. A prototype development method, Multi-Metaphor Method (MMM), was created to help fulfil the research objective. While it is beyond the scope of this paper to discuss the method in detail (a detailed description is provided in Oates, 2000)), it has its theoretical basis in previous research on:

- Systems development methods (e.g. Avison & Fitzgerald, 1995; Avison & Wood-Harper, 1990; Checkland, 1981; Checkland & Holwell, 1998; Checkland & Scholes, 1990; Dahlbom & Mathiassen, 1993; Ehn & Kyng, 1987; Fitzgerald, 1995; Hirschheim, Klein, & Lyytinen, 1995; Jayaratna, 1994; Mumford, 1983, 1995).
- Metaphors for organisational analysis (e.g. Bourgeois & Pinder, 1983; Grant & Oswick, 1996; Morgan, 1986, 1993, 1997; Schön, 1983).
- Metaphors in cognitive psychology (e.g. Allbritton, 1995; Black, 1979; Gick & Holyoak, 1983; Holyoak & Thagard, 1996).
- Metaphors in IS research (e.g. Hussain & Flynn, 1999; Kendall & Kendall, 1993, 1994; Lanzara, 1983; Madsen, 1989, 1994; Walsham, 1991; Walsham, 1993).

For this co-operative inquiry we were therefore developing a theory: MMM, summarised as a set of guidance notes which would be used and evaluated. We were also developing professional practice: the work of systems developers, and examining whether it could include metaphors to conceptualise their client organisations. Since the project also involved the development of information system for three organisations, we were also concerned with institutional change and development.

An inquiry can be informative or transformative (Heron, 1996, pp. 48-49). An *informative inquiry* seeks to describe and explain some domain of experience. Primary outcomes are propositions about the domain, and secondary outcomes are the practical skills involved in

generating the descriptive data. A *transformative inquiry* seeks to explore practice within some domain and change it. Primary outcomes are practical skills and changes in the situation which they have brought about. Secondary outcomes are propositions which report and evaluate the practices and changes, and give information about the context of practice. This research project was primarily transformative. We examined our systems development practice and changed it by using MMM to understand the client organisations, in parallel with conventional systems development methods. Practical skills were acquired in using metaphors and reflecting on them, and our interventions in the organisations changed them. Propositional outcomes concerning the use of metaphors and MMM are presented in Oates (2000; Oates, Forthcoming) and the co-researchers' own reports (Findlay, 1998; Lyons, 1998; Thomas, 1998).

3.2 Initiating the inquiry group

An inquiry group can be initiated by *initiators' call* (one or two researchers invite interested people to join them in an inquiry), or by a *call for initiators* (an existing group has a research area in mind and asks one or two researchers to join the group and start the CI method) or by a *group bootstrap* (a group organises itself into a co-operative inquiry) (Heron, 1996, p. 38). Here the inquiry was launched by my initiator's call, as explained below.

In my department all final year undergraduates undertake a systems development project, lasting 20 weeks. Five such students were assigned to me. I saw each individually and discussed whether they might be interested in trying out MMM. Three, Alan, Marcus and Peter, tentatively agreed. Project students normally have weekly 1:1 meetings with their supervisor. I discussed with Alan, Marcus and Peter individually the ideas of CI, and asked whether they would be willing to have group meetings with the other students who were working in a similar area. I reassured them they could have also individual meetings with me if they wished, and leave the group at any time. At a second 1:1 meeting each said he was willing to try out MMM and co-operative inquiry. It must be noted, however, that their 'agreement' might have been in order to please me.

3.3 The participants

Although students, my three co-researchers were not novice systems developers. Each had previous commercial experience of systems development work and would be returning to such work on completion of his studies. Alan's project involved the development of a database management system for Northton Council's Structures Department (responsible for inspection and maintenance of all bridges in the area). Marcus was to develop a database management system for the Diabetes Care Centre of a local hospital. Peter was to examine the potential of the Internet and World Wide Web for Northern DIY (a company serving the DIY market, with several retail stores), and develop a prototype Web site. The investigation into the use of metaphors and MMM was carried out in parallel with their other project activities. I was their project supervisor, a co-researcher, a part-time PhD student and the initiator of the co-operative inquiry. Naturally we each had our own motivations at the start of the project (see Table 1), but we hoped to co-operate to achieve our goals.

Table 1: Motivations of participants

Briony	Learning re use of metaphors and MMM in systems development.
	Practise and learn about CI.
	Get a PhD.
	Fulfil BSc Project Supervisor duties.
Alan, Marcus and Peter	Develop information system for client organisation.
	Learning re use of metaphors and MMM in ISD.
	Get a BSc.
Clients:	Acquire new or improved information system.
	Support student in getting his BSc.

3.4 The first meeting

The initiating researcher of a CI group must consider three inter-related issues at the first meeting (Heron, 1996, pp. 62-63):

1. Initiation of the members into the method of CI so they can make it their own.
2. Emergence of joint decision-making and true collaboration.
3. The creation of an open, sharing climate.

To break the ice I invited the others to talk about their projects and whether they had met that day's deadline for handing in their project specifications. I talked about the ideas of CI, and again said they could leave the group at

any time. I had not, however, been sure how to create an "open, sharing climate" and promote the emergence of true collaboration. In fact, Alan now took over by announcing, "I'm worried about doing this project". This provided the opportunity for the co-researchers to share their worries, and for me to explain my role in supporting them. I then explained that I had worries too: that I would be tempted to use my position to take over the group, and push them to use the metaphors when they did not want to. We agreed that they would stop me if I broke into "lecturer mode", and I stressed that negative feedback (i.e. "the metaphors are not useful") was as helpful as positive feedback.

We discussed the rationale for investigating organisational metaphors during systems development: that most IT developers received little education about organisations, the focus was always on the technology. Our task was to see whether the metaphors had a role to play in their project work. I emphasised that they were the real researchers, as they were carrying out ISD projects and exploring whether the metaphors helped them. I could not do that, but only offer support.

The goal is that, after launching an externally initiated inquiry, the initiating researchers continue as co-researchers, but of *lesser rank* than the main group. Their intention to move from higher rank to lower rank is one they can state at the outset, but it may not be fully successful (Heron, 1996, p. 41). This discussion gave an early opportunity to explain how I hoped the students would be co-researchers, and that their role was more important than mine.

We agreed we would meet weekly, to discuss and support members in all aspects of their project work. After agreeing what practical action the others would take next, the meeting finished. Afterwards I reflected on the meeting in my research diary. I felt it had gone well: each had contributed to the discussion, and we had begun to gel as a group. The others seemed interested in the metaphors and MMM. I wrote notes on our metaphor discussion and then realised that I should share them with the others. The reasons were:

- The notes would illustrate our metaphor usage, and help make the use explicit rather than tacit.
- They would be a resource for everyone.
- Keeping them 'secret' would be against the spirit of CI.
- I could check whether the others agreed with my recollection and interpretation.

I therefore e-mailed my notes to the others and continued doing this throughout the CI research project.

3.5 Subsequent meetings

Like all action research, CI is essentially an *emergent* process, and its success depends on the goodwill and hard work of those involved.

> *"You can't just* set up *a co-operative inquiry group, because co-operative processes have to be negotiated and re-learned by every group in every new instance" (Reason, 1988a, p. 19)*

This section therefore describes the process that emerged over time.

3.5.1 Cycles of action and reflection

Twelve group meetings took place. The others held meetings with their clients and developed their computer systems. At each group meeting we discussed and reflected on activities undertaken and the use of metaphors, and made plans for the next phase of activity. We therefore cycled between action and reflection, as CI requires. We felt we had enough cycles to draw some conclusions from the inquiry, although of course, more cycles would have given more opportunities to explore the metaphors.

3.5.2 Data generation and analysis

I considered tape recording the meetings. Advantages of this were:

- A permanent record of everything said at the meetings.
- In a busy schedule, a reduced need to write up notes soon after the meeting.
- Disadvantages were:
- Knowing the meetings were being taped could be inhibiting.
- Ensuring everyone was within the hearing of the microphone could disrupt the group.
- Removing the need to write notes soon after a meeting meant a danger that proper reflection on it would not occur.
- Taping would reinforce the idea that I was in charge: setting up the recorder and 'lending' tapes to student co-researchers.

This last was the most significant argument. I was trying to reduce any perception of being in charge of the research, so decided not to record the meetings.

Each of us kept research diaries. Other sources of data were: my e-mail summaries of our metaphor discussions, the models

produced during the systems development work, the course deliverables (project specifications, interim reports and final reports (Findlay, 1998; Lyons, 1998; Thomas, 1998)) and the co-researchers' final evaluation questionnaires (see below).

3.5.3 Apollonian or Dionysian inquiry

A CI project can be either 'Apollonian' or 'Dionysian' (Heron, 1996, pp. 45-47). An *Apollonian inquiry* is rational and systematic, with an explicit sequence of plan, act, observe, reflect, then re-plan. A *Dionysian inquiry* takes a more ad hoc, tacit approach to the interplay between action and reflection, allowing learning to emerge creatively as a response to the situation. In practice, any effective inquiry will have elements of both.

For this inquiry the course requirements for deliverables to set deadlines, and the need to construct technical artefacts within the allowed timescale, provided a strong Apollonian element. The investigation into MMM was more Dionysian –- each was free to consider the metaphors whenever the situation seemed to indicate them. Initially I had a plan of topics for each meeting – an Apollonian approach. However, because I welcomed the others taking control of the meetings, my plans became much shorter and were abandoned each time. I therefore moved to a more Dionysian approach. I knew that the others would have plenty of issues to raise, my role was to help them, and identify aspects of metaphor use as they arose. My reduced need for a detailed plan for each meeting is also an indication of how the others moved from dependency on me towards genuine co-ownership of the inquiry process (see next section).

3.5.4 Authentic collaboration

At the start of this project my concerns about authentic collaboration were:

- Whether my academic language, and position of authority over the student co-researchers, might get in the way.
- How to ensure they were treated fairly in the assessment process.
- Whether they really wanted to take part.
- Whether doing research initiated to meet my needs would be useful to them.
- How to use my expertise in relation to metaphors for organisations and research, and yet do the research collaboratively.
- How much I would control what the group did, and how much I could let go i.e. how collaborative I could be.

To deal with these concerns I:

- Discussed the problem at the first group meeting and encouraged the others to stop me lapsing into 'lecturer mode'.
- Arranged meetings not in my office, but a spare classroom, which was more 'neutral' ground.
- Stressed that negative feedback was useful.
- Ensured that the assessors of their reports were staff familiar with interpretive research and/or metaphors.
- Assured them often they could leave the group at any time.
- Stressed that the group meetings were optional, and individual meetings were possible.
- Ensured all had access to the same data (shared e-mail notes on the metaphors, no audio tape use).
- Asked the others what they thought before giving my views, even when questions were directed to me.
- Asked at the start of each meeting what was on their minds. We used their responses to shape the structure of the meeting.

Eventually I realised I had to accept that a power balance was inevitable, but each of us brought different knowledge and experience to the group. I had more knowledge of research and the use of metaphors, but they had greater expertise of the technical aspects of ISD. I needed their involvement in the use of MMM, but they needed my involvement to help them complete a satisfactory project. CI does *not* imply equality, rather, each brings experiences and skills to the group and is willing to share and develop them collaboratively. At the beginning I had to take the initiative, but through my actions and sharing my thinking I could help the others take more control.

This issue of achieving authentic collaboration is discussed in many of the CI accounts (e.g. Marshall & McLean, 1988; Traylen, 1994; Treleaven, 1994), and indeed is a significant issue in all non-positivist research (see, for example, Lincoln, 1998; Lincoln & Denzin, 1994). It is an unavoidable challenge where the research was initiated externally by researchers who, obviously, have their own needs or objectives which might not fully coincide with those of the other participants. As discussed in the introduction, it is particularly problematic where academics collaborate with student co-researchers.

Indicators of our successful collaboration and the move from dependence on me as leader include:

- Increasingly those who arrived first started discussing project issues and did not break off on my arrival.
- Each of the others led discussions, suggested ideas to the others, and proposed metaphor-based views.
- Each of the others checked that the quiet ones had nothing they wished to say.

Although I felt there had been authentic collaboration, I wanted to give the others the chance to comment without fear of 'annoying' or 'upsetting' me. I developed a questionnaire, derived from suggestions in Gibbs and Haigh (1985) for evaluating small group work. I asked the co-researchers to complete it anonymously, after the end of our inquiry, explaining that this was their chance to say what they really thought. Their responses show each was happy with the group process and its findings on metaphors, and no one thought anyone had dominated the discussions.

3.5.5 Type of inquiry

An inquiry can be *internally initiated* (the initiating researchers are personally part of the culture or practice which the research examines and so are full co-subjects) or *externally initiated* (the initiating researchers are external to the culture or practice which the research examines and so cannot be full co-subjects) (Heron, 1996, pp. 40-41). This CI work was externally initiated – I was not examining my own interactions with the organisations during systems development, but helping others to do that. I was, however, a partial co-subject, in that together the student co-researchers and I developed a joint understanding of the client organisations, aided by the metaphors of MMM. This means that the work was '*partial form co-operative inquiry*' as summarised in Table 2 below:

Table 2: Partial form co-operative inquiry

	Researcher	**Subject**
Political participation – involvement in research thinking and decision-making	Full	Full
Epistemic participation –involvement in experience and action being researched	Partial	Full

The most desirable form of CI is *full form co-operative inquiry,* where all have full political and epistemic participation and the distinction between subject and researcher disappears. The third, less desirable, form is *supported action inquiry.* Here the initiating researcher proposes action inquiry to another and explains how to do it. The other then researches his/her own experience and is supported, very much in a secondary role, by the initiating researcher. (For further discussion of all three forms, see Heron, 1996, pp. 22-25.) It was a concern that I did not participate fully in the experience and action. This is obviously a problem for all externally initiated CI. A resolution of this is suggested by Traylen (1994). She helped health visitors explore their hidden agendas in their meetings with clients, but was not a practising health visitor herself. She realised she too had hidden agendas in her meetings with the health visitor co-researchers, which could be explored as part of the research, increasing her epistemic participation. Similarly, I realised that I could think of our group as a small organisation, and investigate how the metaphors helped me conceptualise it. For example:

- Machine. Our meetings settled into a regular routine of reporting and planning.
- Organism. At different times the group had different needs, reacting to events in the environment.
- Political system. Being aware of my greater power within the group.
- Psychic prison. The danger of becoming trapped by favoured ways of thinking, including *wanting* to believe that MMM was useful.

3.5.6 Types of knowledge

During the inquiry we told stories (presentational knowledge) of events we had experienced in organisations (experiential knowledge). We used the metaphors of MMM to analyse and re-frame the stories, and evaluated MMM (propositional knowledge). In doing this we learnt how to use the metaphors and map them to organisations (practical knowledge).

3.6 Ending

The co-researchers' systems development projects were completed and reports submitted. We met again for final reflections on MMM and the co-operative inquiry. Since this was after the official end of the student projects, it is evidence of group commitment to the inquiry.

Practical outcomes of the research were:

- Development of computer-based systems for three organisations, with which all the clients were happy.
- Student success. Each student co-researcher passed the project part of his degree and went on to gain a BSc honours degree. I ultimately gained my PhD (Oates, 2000).

Four different types of knowledge were gained:

- Practical knowledge was gained by each member in learning how to use and reflect upon metaphors to understand organisations. We all expect to use this skill again in the future.
- Experiential knowledge was gained and we were each changed by having participated in the co-operative inquiry and systems development projects.
- Presentational knowledge was produced when we told stories of events we had experienced or observed in organisations. This was in verbal form only; none of us used other forms of expression such as drawing or music. We may have lost an opportunity for greater insights because of caution in our choice of inquiry and reflection skills.
- Propositional knowledge was gained about the use of metaphors and MMM. This can be found in Oates (2000; Forthcoming) and the co-researchers' individual reports (Findlay, 1998; Lyons, 1998; Thomas, 1998).

3.7 Validity

Positivist research uses replication to strengthen its claim to validity. For CI, exact replication is impossible, since another group will act and reflect in its own way. However, Heron (1996) proposes a set of eleven validity criteria for evaluating the CI *process*: research cycling, balance between reflection and action, balance between divergence and convergence, inquiry and reflection skills, challenging uncritical subjectivity, chaos and order, the management of unaware projections, sustaining authentic collaboration, closed or open boundary, concerted action, and variegated replication. Unfortunately space limitations prevent their discussion here – for further detail see Oates (2000). A CI study can also be replicable in the sense that the initial perspective, research design and practical content are clearly described, so that the study can serve as a launch pad for subsequent different but overlapping studies (Heron, 1996, pp 156-157). This section has described CI in such detail.

4. Conclusion

This paper has explained CI and its use in a particular research context. It is a research method for enquiring into human experience through full participation, action and joint reflection. Some implications of adopting CI can be briefly discussed.

The belief that research into human experience should be carried out by those doing the experiencing, implies that everyone is capable of being a researcher, research is not an exclusive preserve of academics. Are we academics willing to 'let go' and share our position as researchers? For example, one reviewer of an earlier project, (Oates, 1999) queried whether students could be action researchers. The answer of CI practitioners must be, "Of course".

CI recognises more inquiry skills and more types of knowledge: experiential, presentational and practical, as well as the propositional knowledge prized in academic research. This implies that we must acknowledge our current bias towards word-based, propositional knowledge and recognise the other types as being of equal value to (or greater value than) propositional knowledge. Can we, for example, envisage conferences with drama or dance performances?

The adoption of CI would therefore pose significant challenges for both individual researchers and the wider academic community, but these challenges are worth addressing if we wish to undertake organisational research which respects fully the rights and experiences of all the participants.

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Towards an Informed Evaluation of Information Systems Services' Quality: The Development and Application of the Template Process

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In this paper, we review literature on existing measures of service quality applicable to information systems services. We offer the Template Process as an alternative to more traditional methods, illustrating the process with findings from research into the quality of an IS service in a major UK Electronics company as perceived and expected by both service users and deliverers. We conclude with a discussion of the merits and shortcomings of the Template Process and suggestions for further research.

Keywords: Service Quality, Information Systems, Template Process

1. Introduction

Over the past decade the nature of work undertaken by Information Systems (IS) services has broadened to include not only systems development and maintenance but also aspects such as user support (Pitt et al, 1995). During the same period, the IT industry has continued to experience considerable skills shortages and high employee turnover. One response to this and the concomitant recruitment and retention problems for IS specialists, has been an increasing use of outsourced or contract staff to provide IS services (Harvey and Kanwal, 2000). These factors, combined with economic pressures, have focused attention upon the service provided by IS and in particular its quality.

Traditional data collection methods such as focus groups, questionnaire surveys and management-by-walking-about are used widely to evaluate and improve the quality and efficiency of IS services. However, the focus of such data collection and evaluation is likely to be constrained by the values, norms and assumptions of those commissioning and undertaking it. In this paper, we argue that for real improvement in service quality to occur, both service users' and deliverers' perspectives need to be determined. Although the incorporation of users' perspectives into assessments of IS service quality has been established for many years (for example, Conrath and Mignen, 1990), there is also a need to include service deliverers' perspectives in this process (Pitt et al. 1998). These potentially differing perspectives need to be understood and interpreted by managers if they are to go beyond addressing surface concerns relating to IS service quality based only upon their own values, norms and assumptions.

In this paper we outline and evaluate the development of an alternative approach through which IS managers can establish service users' and deliverers' perspectives and evaluate a service's quality. In so doing, we respond to Van Dyke et al.'s (1997) call for improved measures of service quality for IS services providers. Following an overview of traditional service quality measures and their shortcomings in relation to IS, Staughton and Williams' (1994) Service Template Process is evaluated as an alternative. Drawing upon this, developments are recommended. It is argued that this revised Template Process allows the views of IS service deliverers and users to be captured separately in their own words and enables them to be explored and understood by managers in relation to the values, norms and assumptions upon which each is based. Its application is illustrated using a case study of the IS department of a large UK electronics manufacturer. We conclude with a discussion of the merits and shortcomings of the Template Process. In this, the process is contrasted with more traditional measures of service quality. Particular attention is paid to the relative efficacy of these processes in allowing managers to gain an understanding of service quality that will enable informed evaluation.

2. Traditional measures of service quality and their shortcomings

As the role of the IS department in organisations broadens (Pitt et al., 1995), one significant change being experienced is a greater level of interaction between users and deliverers of information technology based

services. Under such circumstances, to regard IS departments purely as deliverers and maintainers of information technology systems ignores the often highly customised, personal service users have come to expect. Consequently, when assessing their effectiveness, it is no longer sufficient to focus purely upon technical measures. Rather, users' satisfaction with service quality must also be taken into account (Pitt et al., 1995) and improved ways of measuring developed (Van Dyke et al., 1997).

Research by Carmen (1990) highlights that the number and nature of dimensions that people use to characterise a service are likely to be a function of that particular service. This issue has been raised subsequently in the debates on service quality, emphasising that use of generic dimensions is unlikely to take account of a specific service's uniqueness (e.g. Cronin and Taylor, 1992; Van Dyke et al., 1997). Notwithstanding the SERVQUAL debates, research has also illustrated the utility of using a disconfirmation approach to highlight 'gaps' between perceptions and expectations of service quality and indicate possible areas for improvement (e.g. Durvasula et al., 1999; Parasuraman, 1995; Robinson, 1999, Staughton and Williams, 1994, Van Dyke et al., 1997). Dimensions, for which service users' perceptions do not meet expectations, suggest aspects to improve. In contrast dimensions where users' perceptions equal or exceed expectations, imply those aspects do not require improvement, or that more may be being done than necessary. However, much of this research contains an implicit assumption that data collected against generic dimensions can capture the characteristics that are important to a particular service.

Traditional measures of service quality such as focus groups, questionnaires and management-by-walking-about could be used to address shortcomings associated with generic dimensions and explore gaps between perceptions and expectations for a specific service's characteristics. In particular, the incorporation of users' perspectives into such assessments of IS service quality is already well established (Pitt et al., 1995), their perceptions offering valuable interpretations of the realities of the service experienced. However, such approaches typically assess quality from only the service users' perspective. Consequently, they fail to acknowledge that service encounters are dyadic (Rosen and Supernant, 1998) and that the service deliverer's perspective is of value (Pitt et al., 1998). The logic of Parasuraman et al's.(1985) 'gaps' model provides further support for such an approach, as there may well be differences in dimensions considered important by services' users and deliverers as well as their perceptions and expectations.

Constructs used to measure IS service quality therefore need to capture the realities of each specific service encounter separately for both users and providers. In addition, if these constructs are to be of real benefit in evaluating and improving IS quality, they must be understood and interpreted by service managers in relation to the norms, and values of those who generated them. Therefore, to enable informed evaluation of IS services' quality, there is a need for a process that meets three preconditions. Namely, it enables:

1. Service users and deliverers to make explicit independently their own ideas of those characteristics of the IS service that are important.
2. Service users and deliverers to highlight, define and record independently any gaps between their perceptions and expectations of that IS service.
3. Service managers to gain a critical understanding of both users' and deliverers' perceptions and expectations of that IS service's characteristics which are important and any gaps between them.

3. The development of the template process

Research on the nature of service quality reviewed earlier, emphasises the uniqueness of each specific service and the utility of assessing gaps between perceptions and expectations. These observations underpinned Staughton and Williams (1994) development of the Service Template. This tool was developed to illustrate the 'fit' between the capabilities of an operation and the needs of the market(s) it served. It allows those characteristics that users believe are important to be defined and any gap between perceptions and expectations to be highlighted and recorded in a visual form, thereby aiding interpretation (Henry, 1995). Each characteristic is defined using terminology specific to the service. As part of this, users specify positive and negative descriptors for the extremes of a continuum for each characteristic. For example, the characteristic 'staff appearance' within a sales service has been defined through the extremes of 'smart' and 'scruffy.' Subsequently, these users' perceptions and expectations for each characteristic are located upon its continuum.

Gaps between perceptions and expectations highlight where action may be needed.

The Service Template therefore addresses partially our first and second preconditions. It allows service users to make explicit their ideas of those characteristics that are important and highlight, define and record any gaps between their perceptions and expectations. However, the process is silent on issues of sample selection and involvement of managers, raising issues of data validity and enabling action to be taken. Furthermore, by focusing on service users, the Service Template excludes service deliverers' perceptions and expectations. Consequently, it is not possible for managers to develop a clear understanding of both users' and deliverers' perceptions and expectations or discrepancies between them (precondition three).

Subsequent development of the Service Template Process (Williams et al., 1999) began to address these shortcomings, reflecting the dyadic nature of service encounters. Users and deliverers were selected using purposive samples based upon cases that were critical to the service. Subsequently their perceptions and expectations of service quality were captured separately. As part of this, they identified separately those characteristics they considered important. Consequently, each resulting Service Template reflected the language, terminology and priorities specific to either service users or deliverers. Within this research, the Service Template tended to be used as a consultancy tool, managers being treated as clients rather than fully involved within the research process. There was still therefore a need to develop the process to enable managers to develop an informed understanding of both users' and deliverers' perceptions and expectations and take ownership of the evaluation.

Our recent research has focused upon developing the Service Template Process so that managers are involved in data collection and analysis as a precursor to action to improve service quality. Development has focused upon ensuring that the process satisfies the three preconditions outlined earlier. The resultant Template Process focuses upon defining problems. Within this, there is a need to minimise problem-defining errors such as biasing effects of professions and work groups that mean their members are likely to only see problems in a particular way (Kilmann, 1986). Development has been undertaken during work with seven UK based organisations, drawn from public, private and not for profit sectors. This has focused upon helping these organisations learn about and improve service quality. It has encompassed a range of service quality issues including those between a manufacturer and distributors, the partners and business introducers in a solicitor's firm and the three parties involved in the provision of social housing. The research has been underpinned by two concerns. Firstly, to investigate and develop a process that meets the preconditions outlined earlier and secondly, to ensure that the process has real practical value for managers in defining problems. Consequently, much of the work has been iterative.

The Template Process, its ability to meet the preconditions outlined earlier and its practical value, are now illustrated using examples drawn from a recent research project with the Information Systems Department of "Electrico", a large multi-site electronic components manufacturer in the UK. Within Electrico, the IS Department was responsible for activities such as equipment procurement, user support and maintaining the Internet. As part of the Department's strategy to improve service to users, the IS Manager for one site in South West England had been tasked, by senior management, to assess internal service user perceptions. Use of questionnaire based surveys to collect such data was common practice within Electrico. However, there was also a perception of no real action resulting from such exercises. Consequently, the IS Manager sought an approach that would overcome issues resulting from such views and enable him to explore and understand those characteristics important for a quality service.

Discussion with the IS Manager suggested that the Template Process could meet these needs. The process was used by the manager to establish and record those characteristics that were important to service deliverers (IS staff) and users. For both groups, perceptions and expectations of the IS Department's service were established separately and recorded visually as Templates, the manager adopting the role of practitioner-researcher. Through this, the manager began to understand and reconcile the range of views of the quality of the service in question, prior to defining problems associated with service quality. Subsequent discussion is structured around the two phases of the Template

Process, exploring both the process and how the preconditions outlined earlier are met.

3.1 Phase I: Sample selection

Our first precondition emphasises the need for independent data from service users and deliverers. Whereas in some cases it may be possible to collect data from all those involved, in most instances samples will be needed. The Template Process therefore commences by selecting separate purposive samples from both service users and deliverers. Within this, the focus is on obtaining critical cases from which logical, rather than statistical, generalisations may be made regarding key themes of the service (Patton, 1990). In this case, a sample of six internal service users was drawn from the eight Personal Computer (PC) Co-ordinators located in Electrico's client departments. Whilst this sample is not statistically representative, the PC Co-ordinators were drawn from those departments that made the greatest use of the IS Department's services. The sample of IS Department staff consisted of seven user support technicians of similar status, who had been with Electrico for over a year and between them covered the full range of services. Together it was felt that these samples could explain the extent of the diversity and the key dimensions within the service (Neuman, 1997) from both user and provider perspectives.

3.2 Phase II: Template generation and validation

Independent meetings, lasting between two and three and a half hours, are held with each sample selected. Their purpose is twofold: firstly to help each sample independently to make explicit and record their ideas of those characteristics that are important to the service under consideration and, secondly, to enable each characteristic of the service and the gap (if any) between perceptions and expectations to be defined in the sample's own words (precondition two).

To help ensure valid data are collected, feelings of cynicism and helplessness with regard to improving the service need to be overcome (Argyris and Schön, 1996). In addition, issues such as dominance by certain individuals and lack of trust need to be managed (Yin, 1994). The first two of these were addressed by the skills of the IS Manager, who emphasised as facilitator that he would ensure personally that action would be taken based upon the research. Trust issues were addressed in part by this manager's credibility within the organisation and by him stressing the confidentiality of the process. In addition, his facilitation skills helped allow open and non-judgmental discussion to take place within each sample as they developed their Template. Perception of status differentials, although not a problem in this case due to the samples selected, may also need to be managed.

The meetings followed a process derived from the four stages of generating a Service Template (Williams et al.1999):

3.2.1 Stage 1: Preparation

At the start of each meeting, the purpose of the event and nature of the Template Process are explained by the manager who takes the role of facilitator. A key task is creating a safe and open environment in which defensive behaviour is minimised (Morgan, 1986). The role is to help each group's members to perceive, understand and capture the characteristics and their perceptions and expectations. Meanings of terms outside participants' normal experience such as "characteristic" and "service" are explored and clarified using a neutral, easily understood, example such as a supermarket visit. The service to be considered and that party's relationship with the other parties is then defined; in this case the "Quality of Services provided by the IS Department". This is displayed prominently throughout all meetings and referred to regularly to help maintain focus.

3.2.2 Stage 2: Explore service characteristics

The characteristics of the service are then elicited from participants and recorded in their words in the order they emerge, using a brainstorming type process. This usually results in between 20 and 30 characteristics. By focusing on the characteristics of the service rather than problems, the tendency of participants to state immediately what they believe to be the problem with the service, and thus the likelihood of defining errors, is reduced. Within this, it is important that the issues associated with groups outlined earlier are managed and the manager enables each group member to participate fully. However, unlike a focus group moderator, the manager does not introduce new topics. Rather, a breadth of characteristics is obtained through the heterogeneity of the sample's experience (Phase I). Because characteristics are recorded separately for each sample, they are likely to differ, both in terminology used and

topics covered. In this case, some of the characteristics mentioned in the service users' meeting included "Support", "Service (range)" and "Procurement process" (Figure 1), were not mentioned in the service deliverers' meetings (Figure 2). Clarification of meaning for each characteristic is sought as part of this process, thereby helping ensure everyone in a sample is using a similar frame of reference (Oppenheim, 2000), which the manager understands.

CHARACTERISTIC	WT	+VE EXTREME	10	9	8	7	6	5	4	3	2	1	-VE EXTREME
Communication	26	open		e			p						closed
Support (general)	19	full		e		p							counter productive
Service (range)	19	comprehensive		e		p							inadequate
Quality	13	reliable		e			p						unreliable
Procurement process	12	seamless		e					p				fragmented
Value for money	11	value added		e			p						wasteful

Key: expectations e overlap p perceptions WT = weight

Figure 1: Extract from Template reflecting service users' perspectives on the quality of service provided by the IS department

CHARACTERISTIC	WT	+VE EXTREME	10	9	8	7	6	5	4	3	2	1	-VE EXTREME
Clarity of purpose of the IS department	23	unambiguous		e				p					vague
Experience / skills	18	lots of				ep							novice / none
IT management	18	strong			e		p						weak / ineffective
Problem identification	15	instant			e	p							never
Staff IT training	14	proactive		e		p							not important
Internal communications	12	loads of…		e							p		never

Key: expectations e overlap p perceptions WT = weight

Figure 2: Extract from Template reflecting service deliverers' perspectives on the quality of service provided by the IS department

Subsequently, the manager asks each sample to refine their list of characteristics and generate positive and negative descriptors for the extremes. In so doing, participants discuss and make explicit their own values and assumptions regarding the precise context for the service. For each characteristic's positive extreme, participants are asked to describe the "ideal" and for the negative extreme, the "worst" situation. Participants are not asked to provide intermediate descriptors, as research has highlighted the difficulties of labelling intermediate categories in an even-handed way (Foddy, 1994). In addition, poor labelling of intermediate categories has been shown to reduce data quality compared to just labelling extreme categories clearly (Andrews, 1984). Each of the resultant bi-polar rating scales defines the extremes of a characteristic of the service. For example, the positive extreme descriptor for the service deliverers' characteristic "support (general)" was, "full" whilst the negative extreme descriptor was "counter productive" (Figure 1).

3.2.3 Stage 3: Plot perceptions and expectations against identified characteristics

Each sample subsequently plots the visual representation (Template) of their perceptions and expectations using the characteristics of the service they have identified. Prior to plotting, the manager explains the key features of this stage using the neutral example. Each characteristic is plotted by first recording the range of participants' perceptions of the current service and then the expectations, relative to the extreme descriptors (Figures 1 and 2). The characteristic and both extremes are stated to help prevent participants defining the characteristic against the extreme on the left (Oppenheim, 1992). Participants' perceptions of each characteristic are defined through their answers to the question "What do you perceive to be the position today?" Expectations are defined using answers to the question "What could reasonably be expected?", equating to Miller's (1977) deserved level of expectation. During this stage, it has been observed that individuals consistently convert the scale into ten points. Consequently, not withstanding Osgood et al.'s (1957) original development work indicating that scales of five to eight points are optimal, both perceptions and expectations are recorded against a ten point scale, ten being the positive extreme and one the negative. Inevitably, this raises an issue of consistency of interpretation between individuals. These

are explored by the manager as perceptions and expectations for each characteristic are plotted, helping ensure a common understanding. Differences between participants' responses regarding both perceptions and expectations are also recorded. For each characteristic, the length of the perception and expectation performance bars represents the range of responses. For example, there was more variation in service users' perceptions of the "Procurement process" than in their expectations (Figure 1).

3.2.4 Stage 4: Interpret and validate issues

The manager then reviews each completed Template with the people who have generated it. This helps confirm the internal validity of the Template and in particular, that participants' perceptions and expectations of those characteristics important in determining the quality of the service have been captured. It also provides a measure of face validity of the Template and allows the manager to check her/his critical understanding (precondition three). Finally, participants are asked to identify and weight those characteristics they consider most important by allocating 100 points between the characteristics, giving those they feel are most important most points, the least important receiving no points. Gaps between perceptions and expectations are confirmed. For example, service deliverers expected "Internal communications" to be close to "loads of…", but perceived that it was far closer to the negative descriptor "never" (Figure 1). These characteristics represent the symptoms of sensed problems and, because those that are important are identified, the likelihood of defining errors is reduced.

4. Interpreting the templates

Interpretation by service managers tends to focus on the major differences and similarities between service users' and deliverers' most highly weighted (important) characteristics and the gaps between perceptions and expectations (Figures 1 and 2). Where the characteristics against which perceptions and expectations have been recorded are similar, these norms and values for the service are reinforced. Where the process highlights any discrepancies, norms and values upon which users' and deliverers' ideas about the service's quality are based are challenged. The recording of these data as Templates and the full involvement of the manager reduce problems of second-order interpretation. In addition, it fosters ownership and commitment for agreed action.

Figure 1 and 2 show extracts from the Templates produced by the IS service users and deliverers. Although each included approximately 35 characteristics, these extracts focus only on those weighted as important. At first sight there appeared to be little consistency between the characteristics identified. The users' Template (Figure 1) focuses upon the service itself, with characteristics such as the "Service (range)" and the "Service (general)" reflecting the nature of the offering. In contrast the deliverers' Template (Figure 2), is predominantly inward looking, with characteristics such as "Clarity of purpose" and "IT management" reflecting their concern with the maintenance of the IT based systems. "Communication", although common to both Templates, reflects differing aspects of the characteristic. Discussion during Template construction had revealed that service deliverers were referring to internal communication within the IS Department whilst service users were referring to communication between themselves and the IS Department.

The service users' Template indicates a fairly close match between perceptions and expectations for most of the characteristics, although the service fails to meet expectations in all cases. For the most part, users' perceptions and expectations are tightly focused, indicating a convergence of participants' views. The weightings for both "Communication" and the "Procurement process", together with the relatively large 'gap' suggested that these areas required attention. The service deliverers' Template emphasised their perception that "Experience/skills" within the IS Department matched what could reasonably be expected. However, gaps between perceptions and expectations highlighted a lack of "Clarity of purpose" and that "Internal communications" were perceived as virtually "never" occurring. Based upon the Templates and information gleaned during their construction, the IS Manager was able to highlight actual problems in areas users felt needed improvement. Further discussion with service deliverers suggested possible causes were a lack of clarity regarding the IS Department's role and only limited appreciation of the importance and need for good communication with customers.

5. Discussion

This research has shown the Template Process as an effective alternative means of collecting data concerning IS service users' and deliverers' views independently. It allows

them to make explicit their own ideas of those dimensions or characteristics that are important and for these to be recorded visually along with any gaps between their perceptions and expectations. Through facilitation of this process, service managers are able to gain a more detailed understanding of both users' and deliverers' perceptions and expectations than is the case with questionnaires.

Initially, when compared with focus groups, the advantages of the Template Process appear to be less pronounced. As with focus groups, the role of the facilitator in ensuring that the data are valid and reliable is paramount. In this case, the manager had sufficient credibility to be trusted by employees both within and outside the IS Department, something a focus group facilitator would also need. However, the structure of the Template Process also provided high face validity for the data collected from participants, something not always apparent with focus groups (Krueger and Casey, 2000). As in other service situations where this approach has been used, both service users and deliverers understood and liked the visual representation of service quality in their Templates. They argued these strengthened their ownership of the data provided and helped highlight differences in the way service quality was characterised. Full involvement of the manager in the data gathering phase aids subsequent exploration of these Templates and, in particular the development of a clear understanding of both service users' and service deliverers' perceptions and expectations. By adopting this approach, it is argued that errors are more likely to be avoided during problem definition. Subsequent use of these Templates in the IS Manager's report helped emphasise that the integrity of their data had been maintained through the evaluation.

Service user and provider involvement in the Template Process was confined to capturing and recording data, the reconciliation and interpretation of perceptions and expectations being undertaken by the manager. Thus, while this development of the process allowed both IS service users' and deliverers' views to be reflected, there still exists a need to develop a means for those involved in generating the Templates to explore, understand and reconcile these differing perspectives. Although time consuming, enabling all participants to jointly explore the Templates and their meanings, could provide an opportunity for informed dialogue towards a jointly agreed agenda for improvements in service quality. We are currently undertaking research to develop the process to allow service users, deliverers and managers to evaluate their Templates jointly, define problems and work towards possible actions.

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Research Strategies – Beyond the Differences

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The work of the scientist whether he or she is from the physical or natural scientific community or from the social science community is not materially different. The processes are much the same. The outcome required which is to add something of value to the body of theoretical knowledge is exactly the same. This paper uses the dialectic to highlight the core activities of the scientist.

Keywords: Research process, research question, Theoretical research, quantitative, positivism, qualitative, interpretivism

When reflecting on what is often said by those who write about research in Business and Management Studies one is left with the feeling that there is sometimes an incomplete understanding in our community of what constitutes research processes. In some senses this is true in other fields of study, although the apparent self-confidence of the researcher in the physical sciences or life sciences could lead one to believe there is no need to question, whatsoever their scientific method.

The confidence of the physical scientist and the life scientist is of course based on three hundred years or so of sustained success using *sound scientific practice* (Gibbons et al 1994). The achievements of this approach to knowledge or science is obvious to all by simply considering the life we lead in the early years of the twenty first century. These three hundred years or so has lead to the institutionalisation of the practice of research to a point where research methods are seldom taught to new comers to these disciplines. Students of the physical sciences and the life sciences pick up research skills in the "lab" as they develop other knowledge and skills.

But social science is *"no Johnny come lately"* either. Social science which is off course that major branch of knowledge or field of study to which Business and Management Studies belongs, has a history which can be seem as commencing somewhere between one hundred and one hundred and fifty year ago. So it is not as through social science is a start-up activity, which only began recently. And even if we were to decide that the roots of Business and Management Studies do not belong in the traditions of the nineteenth century social sciences (Remenyi et al 1998) but with Elton Mayo at the General Electric Hawthorn Plant in 1927 (Rosenthal and Rosnow 1991) we still have just about seventy years of work and understanding to call upon. But what might be said is that the results of the work conducted in the social sciences, unlike the physical sciences or life sciences have not lead to dramatically or sensational results of which we are all aware. Social science has no equivalent to a man on the moon or to a heart transplant. And in the case of Business and Management Studies we have very little indeed to point to which could capture the imagination of the man or the woman in the street.

This does not mean that our research work in social science or Business and Management Studies is less scientific or for that matter is in anyway inferior to the research work conducted in physical sciences or life sciences. In some respects it may actually be better. Certainly there are many who would argue that the challenges facing the social scientist are more daunting than those facing the other research culture.

To understand this it is important to start at the beginning of the research process. The first step is to establish that knowledge is not handed down to us by some super-human source such as an oracle or a god but that it is developed by the application of the human intellect (Butterfield 1957). If this is the case, as I do believe it is, then the first step in the research process is a human thought. This thought will no doubt have been stimulated by some observation. It is sometimes said that the roots of all science may be attributed to an early desire to look at the heavens and to marvel at the panoply of stars. From this sense of marvel may have come the thought of *"What are these things and how do all these moving objects work?"* Of course, on the subject of how a human thought drives the research process we have a number of classical anecdotes, such as the stories of Archimedes in his bath, Galileo at mass watching the incense burner swinging to and fro and Newton in his apple garden.

Whether we are considering the physical sciences, the life sciences or the social

sciences the research process begins with an interesting thought about the world around us. Without this there is no research. The interesting thought or research question is the common starting point of all research work in all fields of study. From this point research is always concerned with the emergence of theory whereby concepts and notions develop through the application of ideas, the observation of evidence and the evaluation of results. It is worth always keeping in mind that the final result of research is to add something of value to the body of theoretical knowledge.

Having established this interesting thought that in the field of Business and Management Studies might be for example, "Why do investments in Information Systems appear to show such small yields?" the next step is to make some statements about this phenomenon. In terms of the current academic tradition we are discouraged from making spontaneous or impromptu statements, probably due to a concern or fear of repetition or redundancy.

So with this research question or interesting thought in mind we read the literature to see what other have said about this subject. With this contextual knowledge we may then in a position to make a comprehensive statement about the subject we are researching. In the language of Socrates and Hegel (Foster 1963; Sabine 1964; Plamenatz 1966), we now have a thesis. A thesis or a theory is a major step forward in the research process but it is only a first step. The thesis needs to be put to the test (Feynman 1995).

There are many ways of putting a thesis to the test. In ancient times we might have asked the oracle to cut open the entrails of a frog or a lizard and looked for a sign. Today we are more circumspect as to how we use the lives of animal in science. In the physical sciences and the life sciences the putting to test of the thesis or theory is frequently a question of following well tried and tested routines in the laboratory using scientific artifacts or equipment such as a test tube, a pipette or maybe a mass spectrometers or microscopes or some such devices. It is often the case that there is no discussion as to the approach, which the physical or life scientist will chose for the research, as scientific precedent will be the overriding issue.

But the science is not in the instruments or the analytical techniques employed. They are but tools. In fact the science is not even in the results obtained by these instruments and techniques. The science is in the way the results are understood and interpreted.

The range of tools available in the Business and Management Studies field is of course quite different to those described above where there is often an apparent latitude in the tools used by the researcher. As students of human and organisational behavior it is seldom appropriate for the social scientists to reach out for standard tools or equipments. In fact part of the challenge of social science is for the researcher to be able to conceptualise the tools required for the job, which may be setting up arrangements for observing management at work, becoming involved with individuals as part of action research (Coghlan and Brannick 2001) or simply a series of questions, to pursue the inquiry (Myers and Avison 2002).

The apparent latitude in the choice of the research strategies, techniques and tools is perhaps one of the greatest challenges, which the Business and Management Studies faces. The word apparent is critical here in that on close examination it is often the case that only one of the apparent research alternatives would in fact be appropriate for a particular inquiry. It is often the case that it just would not make sense for a researcher to use quantitative tools to explore certain types of questions. For example it might be quite inappropriate for a researcher interested in personal attitudes towards leadership issues to use a blunt instrument such as a questionnaire. In a similar way it might not be sensible to use interpretivist techniques to understand the relationship between corporate debt and profit margins. Thus the initial interesting thought and the subsequent research question is all-important in directing the course of the research process. But once again the science is not in the strategy, technique or tool. Whatever the research strategy, technique and tool which is chosen we are still only talking about the way that we will collect and perhaps analyse evidence which will eventually take us to the real science.

Of course, it is important it know the alternative research strategies available and what they mean or imply. In Business and Management Studies we have two major high-level stratagems. Firstly we can take a theoretical or an empirical approach to our research. If we take the empirical approach we again have two major, high-level choices that of the quantitative or the qualitative research

designs. But whichever of these process paths we take we are only doing one thing – we are putting to the test our theory or thesis. This testing of the thesis will almost certainly lead to new insights and to the raising of new issues. These will throw new light on the original interesting thought. Some of these may support the original idea and some may well contradict it. In the language of Socrates and Hegel, these new modified thoughts are the antithesis.

At this stage in the research process there is no difference between the circumstances faced by the physical or life scientist and the social scientist.

Sometimes the thesis and antithesis will collide head-on in heated argument leading to the abandonment of the original thesis and the creation of a completely new one. But this is not the usually case. What most frequently occurs is that the antithesis will suggest that the thesis could be strengthened by the applications of certain additional constraints or additional variables. In this way a dialogue or discourse emerges to closely examine the implications of the thesis and how some form of change may affect these. An important characteristic of this is that theory emerges slowly through this discourse. Despite the folklore associated with Archimedes, Galileo and Newton knowledge creation is seldom the result of a flash of genius. Other times there may not be any material difference at all but rather the antithesis will be a refinement of the thesis. The original interesting thought is simply modified. But whatever the details of any particular reaction between thesis and antithesis this process may be seen as what Socrates and Hegel refer to as the synthesis.

This in effect is the real science. It is what we have at the heart of the research process. It is the dialectic. It really doesn't matter how we get to this point. We can be theorists or empiricists. We can be positivists or interpretivists. We can come to this with a hybrid approach, which draws on various aspects of both these traditions. What matters are the three steps – the thesis that has to be put to the test and thus bring into existence the antithesis and then the final combination of these two arguments in a new synthesis.

Of course, the above is a very high level description of the research process. Coming up with an interesting thought or idea for research is no mean task. To be academically sound this interesting idea has to be positioned in the body of academic thinking, known as the literature and this can be a substantial and challenging task in its own right. The interesting idea has to be capable of leading to a research question or perhaps a series of questions, which lend themselves to rigorous testing.

Then the choice of the testing approach is a major research concern. If a theoretical research strategy is chosen, then the test of the ideas and the research question is by means of discourse. This was the method of Socrates who would take his ideas to the market place in Athens and argue his point of view again and again with the people in the street. In academic research this is done on a rather more exclusive basis whereby the researcher is expected to present his or her ideas at seminars and conferences so that they are exposed to highly critical audiences. The researcher would also be expected to present his or her thinking to learned journals where the work would be peer reviewed by highly critical authorities. Clearly there are plenty of opportunities here for antitheses to be thrown up and ideas to be developed.

If an empirical approach is taken the detail of the research work will be different but it will require the same intellectual processes. Much is often made as to whether the researcher decides to take a quantitative or positivistic approach to the research or alternatively takes a qualitative or interpretivist approach. In fact when examined closely the difference between these two approaches reveal themselves to be much less significant than they may first appear. In both cases primary evidence is collected and is analysed. The results of this analysis are then interpreted. It is then decided if and to what extent the evidence supports the original thesis. In effect a judgment is made. This is the approach used by both the quantitative and the qualitative researcher. Of course, one works primarily with numbers and while the other works mostly with words or images. But the research process is the same. Once again, whichever route is taken there are opportunities here for antitheses to be revealed.

If it is possible to put ones finger on the essence of science or research it would have to be the dialectic. It is the dialectic, which is the crucible in which theories are made to stand up to scrutiny. If the idea or theory is sound it will survive the ordeal. If the theory is flaky it will simply collapse under the pressure of this approach. This is equally true for the

physical sciences, the life sciences and the social sciences.

But this is not the full story of the work required of the researcher. We still have to put this all together – the interesting idea, the contextualising of it though the literature review, the choice of the testing approach, the results of the test, the interpretation of the results, and the subsequent challenge to the thesis by the antithesis and the eventual synthesis, into a completing and convincing argument. Furthermore, this compelling and convincing argument has to be written in such a way that someone may wish to read it. This certainly tests the metal of the researcher.

We therefore posit that it is not difficult to see that the work of the scientist whether he or she be from the physical or natural scientific community or from the social science community is not really materially different. The processes are much the same. The outcome required which is to add something of value to the body of theoretical knowledge is exactly the same. The differences mostly relate to the initial interesting question. And by my reckoning social scientists have a very challenging pool of questions indeed.

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Gender Reflexivity: A Missing Element from Action Research in Information Systems

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Much of the literature on AR in IS appears to have forgotten its radical roots and its subjective epistemology. More rigorous, mechanistic approaches and control mechanisms are continuing to emerge rather than more insightful and innovative methods of interpretation and reflexivity to facilitate making sense of the research. AR is a methodology, like ethnography, that involves people and as such is subject to organisational power and politics that can have dimensions of age, race, social class as well as gender. This paper argues that action researchers involved in information systems development should become more critical in their approach and provide insight into their research by avoiding linguistic reductionism and sanitised stories that remove the struggle, conflict and injustice inherent in all organisations involved in change. This can be done in a variety of ways. One such approach is by developing and presenting stories that are interpreted through different lenses that reveal to the reader new dimensions in the research. The lens used in this paper is a gender lens.

Keywords: Action Research, Information Systems development

1. Introduction

Action Research (AR) within the Information Systems (IS) field of study has emerged as a research methodology congruent with the need to investigate practical problems of IS in an organisational context and become involved with their solution. This has been particularly so in IS development. The origins of AR are unclear but careful examination of the literature shows "*clearly and convincingly that AR is a root derivative of the scientific method reaching back to the Science in Education movement of the late 19th century*." (McKernan, 1991:8)

Despite its clouded origins it is generally agreed that it was Kurt Lewin in the mid 1940s who constructed a theory of AR as "*proceeding in a spiral of steps, each of which is composed of planning, action and evaluation of the result of action*" (Kemmis and McTaggert, 1990:8). Lewin argued that in order to "*understand and change certain social practices, social scientists have to include practitioners from the real social world in all phases of inquiry*." (McKernan, 1991:10)

Since Lewin's death in 1947 theory has moved on. Now the term action research is generic and is used to refer to a bewildering array of activities and methods (Miller, 1994). Some AR methodologies have developed from sociology that tend to focus on structural emancipatory issues while others have their origins in applied behavioural science and have developed in the organisational context. Action research is radical in so much as it challenges the traditional scientific approach to research. First it shares the power of knowledge production with the researched thus subverting the normative practice of knowledge and policy development as being the primary domain of the researchers and policy makers. Second researchers work on the epistemological assumption that the purpose of academic research and discourse is not just to describe, understand and explain the world but to change it. Third is that the data used in the research approach are systematically collected and come from both the research participants and the researcher. Questions of reliability, replicability and universality do not pertain to AR. Instead AR poses three questions:

- *What happened? (A good story.)*
- *How do you make sense of what happened? (Rigorous reflection on the story).*
- *So what? (What has been learned) (Coghlan and Brannick, 2001:10)*

Much of the literature on AR in IS appears to have forgotten its radical roots and its subjective epistemology. More rigorous, mechanistic approaches to control the research process are continuing to emerge (Avison et al., 2001) rather than more insightful and innovative methods of interpretation and reflexivity to facilitate making sense of the research. AR is a methodology, like ethnography, that involves people and as such is subject to organisational power and politics that can have dimensions of age, race, social class as well as gender (Warren and Hackney, 2000). This paper argues that action researchers involved in information systems development should become more reflexive in their approach and provides insight into their research by avoiding linguistic reductionism and sanitised stories that remove the struggle, conflict and injustice inherent in all organisations involved in change. This can be done in a variety of ways. One such approach

is by developing and presenting stories that are interpreted through different lenses that reveal to the reader new dimensions in the research. The first section of the paper examines what is understood by the term 'reflexivity' and how this understanding might inform how IS action researchers might approach the re-examination of the IS literature from a more critical perspective. The second section describes how the IS action researcher could present and interpret their 'story' by using a gender lens to provide insight into issues that have impacted upon the outcome of the research. Finally the third section discusses some of the salient points that are relevant to this type of approach.

2. Reflexivity

There are many definitions and interpretations of 'reflexivity' throughout the social science literature (e.g. Bourdieu and Wacquant, 1992; Calás and Smircich, 1992; Maranhão, 1991) and it is not the intention of this paper to explore this subject in excessive detail. However, one particular text (Alvesson and Sköldberg, 2000) that draws upon this vast literature has emerged and has provided a greater insight into the problematic nature of qualitative research and its interpretation. Alvesson and Sköldberg (2000:5) argue in favour of qualitative research that acknowledges that all references to empirical data as being the '*results of interpretation'* and not a mirror of 'reality'. This means '*awareness of theoretical assumptions, the importance of language and any pre-understanding, all of which constitute major determinants of the interpretation'*.

Alvesson and Sköldberg (2000:5-6) also advocate that reflexivity has a second element which requires attention being '*turned towards the researcher, the relevant research community, society, cultural and intellectual traditions and the central problem of language and narrative in the research context'*. Thus reflexivity would be defined as the '*interpretation of interpretations'*. Reflexivity is a challenge to explore how we construct ourselves socially while also constructing objects 'out there' in our research. It challenges us to explore aspects and dimensions of the research that might prove uncomfortable and provide multiple interpretations to develop maximum insight into the social construction of the research. Reflexivity thus occurs when one mode of thought is confronted by another.

2.1 Reflexivity on action research in the field of information systems

There are many interpretations of AR and the approaches that may be adopted (Reason, 1994; Flood and Romm, 1996; Moggridge and Reason, 1996; Dash, 1999; Stringer, 1999, Coghlan and Brannick, 2001). However, in the field of IS action research is seen as an interventionist approach to the acquisition of scientific knowledge with foundations in the post-positivist tradition (Clark, 1972; Susman and Evered, 1978; Baskerville and Wood-Harper, 1996; Lau, 1997,1999; Avison et al, 1999; Avison et al., 2001). Rapoport's (1970:499) definition of action research is one that is frequently quoted:

> *"Action research aims to contribute both to the practical concerns of people in an immediate problematic situation and to the goals of social science by joint collaboration within a mutually acceptable ethical framework"*

One of the major influences in action research within IS area has been Peter Checkland, who began to recognise the limitations of positivism during the late 1960s early 1970s (Checkland, 1981). Although attracted to AR as a methodology Checkland has been unable to accept the loose framework of the interpretivist tradition and has sought to argue a much more structured approach to this type of work (Checkland, 1991; Checkland and Holwell, 1998a,b). His approach to AR focuses upon an "ideal type" model of traditional research in which there is a declared-in-advance framework of theoretical ideas (F) that are then used in a methodology (M) to investigate an area of interest or concern (A). Checkland believes that AR, organised along his principles '..c*an be made to yield defensible generalisations'* (Checkland and Holwell, 1998b:16).

The quest for academic rigour through control of the AR process can be seen in the literature that has emerged since Checkland' s (1981) early work. Baskerville and Wood-Harper (1996:242), while advocating an approach to AR similar to Checkland's, have included their own criteria to ensure 'academic rigour':

- Establishment of a formal research agreement
- Provision of a theoretical problem statement
- Planned measurement methods
- Maintain collaboration and subject learning
- Promote Iterations
- Restrained generalisation

Lau (1997, 1999) has developed a 'unifying framework' of action research and Avison et al. (2001:44) focus on aspects of control mechanisms " *to make AR more feasible and rigorous for researchers in information systems".* It is not the intension to explore all aspects of IS action research only to give a flavour of how academics have moved the research agenda in a direction that seems at odds with the original philosophy.

There are a number of problematic aspects to the emerging literature on IS action research. First is the rhetoric that emerges from the IS action research literature concerned with practical knowledge developed within organisations with local practitioners when the reality appears to be an academic elite/a priori agenda. Second is the uncritical manner in which the IS action research 'story' is interpreted and the lack of any real engagement with the power and politics of organisational research (e.g. Davison and Vogel, 2000; Chiasson and Dexter, 2001). In fact Mumford states:

> *"Action researchers must recognise that they are operating in volatile political situations where there may be different, even hidden agendas. It is important to be aware of internal politics but at the same time to keep detached from them" (Mumford, 2001).*

Third is the sanitary manner in which the research must be presented in order to be accepted by academic journals. Mumford alludes to this issue in her discussion of writing up AR projects when she tried to involve participants in her research in writing part or all of the article themselves (Mumford, 2001:25). She also states that AR can be stressful for the researcher – but how many times does this emotion appear in AR articles on IS research?

2.1.1 Action Research and Gender

Although there is literature in the IS field that considers gender issues (e.g. Robertson et al., 2001; Wilson, 1999; Lander and Adam, 1997) there are few if any on IS action research and gender. A reason for this could be the focused perspective that action research has adopted within the IS domain or that much of the literature written on IS action research is by men.

This narrow focus is not the case in other areas of management and organisational research where there is a much broader interpretation of AR and also a more in depth discussion of epistemology and theoretical perspectives with respect to AR. There appears to be a recognition that in a post modern world and with more academics in the field of management engaging in philosophical discussions the concepts of 'truth' and 'knowledge' is subjective and dependent on power and powerful groups (Reason and Bradbury, 2000).

Reason and Bradbury (2000) in recognising the various interpretations of AR have included contributions from many practitioners in the AR field with an array of theoretical perspectives – including a feminist perspective. Reason (2001) also discusses an AR project carried out by a black, professional woman working as a manager in a large organisation. This project investigated how black women learned to survive in the workplace and raised many issues of race and gender that previously she and the participants in the research had denied. This emancipation involved problematising the world of management. She used feelings, emotions and new metaphors to explore the situation and challenged the participants and readers of the research to explore some of the taboos about which we do not normally speak.

The reality of AR for those of us who have used it as a research methodology is that there is a survival aspect to it where we negotiate our way through the project and encounter organisational politics as well as manipulation and prejudice. If engaged in IS development there is an outcome and the journey by which we arrive at that outcome is open to multiple interpretations. There is not one story but many. IS action researchers must be prepared to develop a more reflexive understanding of their project and more innovative ways of making sense of their research material (interviews, observations, questionnaires etc). This mode of AR would be grounded in a critical/postmodern approach that aimed at interpretive, open, language-sensitive, identity conscious, historical, political, local, non-authoritative and textually aware understanding of the subject matter. Interpretations of the data may focus upon the political or power dimensions of the research. It may have racial or homophobic interpretations. However, it is through a gender interpretation that this critical approach to AR in IS research is to be demonstrated in the next section.

3. An action research project in North East Hospital

In 1994 I began an AR project that was to span a six year period with four major iterations. Initially the practical problem that sparked interest and gave rise to the project was the continuing failure of NHS hospitals to implement integrated information systems but over time it became focused on emancipation and the role of the systems analyst within IS implementations (Waring, 2000). By the time I began my work at North East Hospital I had already completed three major pieces of AR working on integrated information systems implementations.

The department of Gynaeoncology in North East Hospital has a long history and has been influential in the development of gynaecological oncology as a clinical speciality in its own right. It is considered to be one of the principle centres in the UK for the treatment of gynaecological cancers and is well known internationally, particularly in the development of standards and training and research.

Treatment of patients diagnosed with cancer is generally by surgery, which ranges from simple procedures performed under local anaesthetic to major surgical events. Radiotherapy and Chemotherapy complement surgical treatment and are carried out by other specialists within the Hospital.

3.1 Data collection and analysis

The data collected in Gynaeoncology took place over a nine month period. As in all of the AR projects mentioned data collection involved semi-structured interviews with the main participants in the project. In the Gynaeoncology project this consisted of 30 staff in total from the department itself as well as staff who interfaced with Gynaeoncology: Admissions, Outpatients, Colposcopy, Ward G, Theatres, Finance and Coding. Interviews were tape recorded, transcribed and fed back to interviewees for verification. I kept a research diary of what took place every time I visited the hospital. The focus of the writing was my understanding of the project, reflections upon my role, my practice, how I was treated by participants in the project and my interactions with others. Participant observation was also used in the AR project along with document analysis. The document analysis was highly sensitive and confidential due to the nature of the work in the department.

I am now going to structure some of the AR story in a normative manner but within that structure bring to the fore gender issues and the silent voices that are all too often omitted from the final version of what took place. It uses emotion, metaphors and radical interpretation of events and situations to challenge the reader. The approach that I have chosen to take has been inspired by Warren and Hackney (2000) and their work on gender issues and ethnography.

3.2 Gaining entry to the research site

Within the context of AR gaining entry into the research sites can depend on a number of factors ranging from a decision by the researcher to investigate a particular problem in an organisation to being invited by an organisation to help solve a problem. It could be within the researcher's own organisation and environment or one at some distance away from it. For the stranger confronting a new AR project their initial reception by the host organisation/participants reflects a cultural contextualisation of the fieldworker's characteristics - age, physical appearance, social class, ethnic, racial or national difference as well as gender.

In my case the first contact with the Department of Gynaeoncology was when I crossed the hospital grounds to an isolated building guarded by an intercom to request access and a key code lock for those lucky to be allowed the combination. I never was. After being kept waiting for a considerable period of time I eventually met the clinicians with whom I was to work. My diary entry at the time exposes my feelings and gives signposts towards how the relationships within the project might develop:

> *"The meeting to discuss the gynaeoncology project took place today (April, 1997). I met with the two clinical consultants and the business manager in the Clinical Director's office in the department. The atmosphere was tense and I was nervous. I found myself being questioned intently by the Clinical Director about my ability and the nature of the research. The business manager who had been involved in the integrated Payroll/Personnel project was quick to testify as to my credentials but Mr X was not that impressed. I had to sit and listen to them brag about the nature and importance of their work. They were doing life-saving work. I just felt my research was trivial." (Diary entry, April 1997)*

The success of the Payroll/Personnel project counted for little here and I was taken aback by the reception. Even the initial discussions with senior management of the hospital did not properly reflect the problematic nature of the situation. What emerged during the course of the meeting was that the clinicians wanted an information system that would allow them to administer and analyse their cancer research and possibly help administer their clinics and record data during operations. The business manager wanted the department integrated into the administrative systems of the hospital as they currently operated in isolation to the rest of the hospital. There was little real interest in my work and when it came to explaining the research and the theoretical framework that might be applicable the Clinical Director paid only brief attention and soon brought the meeting to a close. What I had not realised at the time was that this was the way he dealt with most of his interactions with women. These insights were gained from being in the department frequently and observing his interaction with the various people with whom he came into contact as well as vignettes that emerged during interviews.

3.3 Diagnosing the Problem

Researchers carrying out AR cannot assume that the problem as articulated by the original contacts is in fact correct and consequently there needs to be a period in which they gather data to discover the issues from all perspectives. AR is also premised on the fact that participants in the project are willing and able to enter into discussions and want to change the situation. As this was intended as an integrated project involving a number of departments it was essential that all participants were involved in the diagnosis as it could affect them.

According to Warren and Hackney (2000) gender and its intersections with other field-worker characteristics can provide and limit access to various settings and topics. Gender also frequently serves to define appropriate and inappropriate behaviours. They suggest that female researchers can gain access to areas because of their ability to be 'invisible' in certain mixed-gender organisations where men are dominant in the organisational hierarchy. However, this is complicated in IS Action Research as the researcher takes a more prominent role and in fact could be seen to challenge the norm. Their ability to be 'invisible' is limited. Thus the fieldworker must '*find a place'* (Warren and Hackney, 2000:11) which allows her to collect data and interact with the individuals that she needs to work with if the project is to proceed. Of course this relationship is also reciprocal in as much as the participants in the project may reject the researcher and refuse to co-operate.

'Finding a place' in the Gynaeoncology project was not easy. The clinical consultants within the context of their department only came into contact with women as patients who needed surgery or as servants – secretaries, administrative staff or nurses. This relationship was demonstrably subservient as observed on wards and in the departmental office. I did not so much find a place but was assigned a place by the clinicians – as their servant to develop their information system. This place was not negotiated and once assigned it proved difficult to gain access and interact with the clinical consultants as I required. I was not the only researcher having difficulty. There was another female researcher, an ex-nurse, working on an NHS funded PhD. project investigating psycho-sexual problems following radical gynaeoncological surgery. She had been told by the Clinical Director that her research was a complete waste of money and unnecessary:

> *"When I have spoken to a woman and discussed her illness she doesn't need any psycho-sexual counselling" (Interview with Senior Registrar, September, 1997)*

The administrative staff in Gynaeoncology assigned me a different place and they treated me with deference as I was seen as part of the Clinical Director's project. They did not attribute any aspect of the research project to me. However, I was not comfortable with this early relationship and over a period of weeks it changed as I tried hard to become 'one of the girls'. I joined them at lunch breaks and generally infiltrated my way into the daily routine of the office. This provided me with insight into the actual information systems within the department instead of idealised ones - for example I discovered the secretaries selectively writing up clinical notes for one junior doctor and not another causing bottlenecks in the system; secretaries prioritising GP patient referrals on behalf of the consultants and discussing patients results with them on the phone.

An area of the research that was problematic was the relationship with ward staff. I had great difficulty in gaining access to nursing staff on the gynaeoncology ward in the main part of the hospital. In the beginning they refused to participate in the project. Over a period of two weeks I was given appointments to meet nursing staff that suddenly were cancelled.

When I did eventually meet the nurses my explanation of the project was met with stony silence and staff leaving the room. I found this a highly stressful period of the project as I tried to gain their confidence. They viewed me as a spy and lackey of the Clinical Director. This place once again was assigned and needed to be re-negotiated over a number of weeks. Through regular contact - turning up uninvited at coffee times -the relationship improved slightly as I listened to their problems and difficulties especially in their relationship with the Clinical Director and with previous failed information systems. They made it quite clear that they had other priorities:

> *"We had a computer put on the ward to do the rostering of staff. It's over there in that corner. Nobody uses it. We haven't got time and we were never trained. It takes us all of our time to look after the women on the ward."(Interview with Ward nurses, August, 1997).*

My assigned place as a spy also extended to the Theatre nurses where I was 'taken prisoner' and then released:

> *"I turned up for my interview with Theatre Nurses J and B today at the Operating Theatre Suite. I was wearing my interview suit. They took me into a room where I was made to strip and then dress in a theatre gown, hat and shoes. I was then taken to a little room within the suite where I conducted the interview and they made me a cup of tea" (Diary entry, August, 1997)*

However, by allowing the ritual to take place I gained a degree of trust and they then proceeded to discuss some difficulties they had with the Gynaeoncology department and in particular the Clinical Director. They insisted on anonymity.

The complexity of the project brought other relationships and roles that the researcher had to negotiate. The experience was akin to that of an ambassador in a war zone. The various roles and relationships that developed over time produced research data which reflected the degree of intimacy or otherwise with the participants.

This gave rise to problems when I had to report the findings and the diagnosis of the situation. I was fully aware of the potential for bias in the research as I became aligned with various individuals and became emotionally involved in the context of the department. The problem as I reported it was not a one of technical development of a system but a major overhaul of work processes to aid patient care and ease junior doctors and nurses workloads. I recommended computerising only a small part of the department's working processes at that time.

3.4 Taking action

It took a few weeks for the management of Gynaeoncology to decide whether they wanted to continue. Eventually they decided to go ahead with developing the clinical consultants' cancer database and integrating the departmental administrative processes with the main hospital systems. I then tried to facilitate the systems analysis that was required. This was problematic as the clinical consultants would not co-operate in the manner agreed - they did not co-operate with staff! The administrative staff and secretaries were also difficult. As they were not asked by the Clinical Director to the meeting to discuss the action they were less than enthusiastic about their involvement. I had to re-negotiate my role in the department as a mentor and teacher. I taught them new IT skills and they co-operated in the systems analysis exercise by modelling their work processes and information flows.

At this point two male researchers joined the project as database programmers researching prototyping in the department. Although I was supervising their work, their relationship with the clinical consultants and secretaries was markedly different. By working on the cancer database system everyday for a number of weeks they were able to converse in a medical language familiar to the clinicians, even though they did not understand the context. Their technical IT skills were superior to those of the consultants and this gave them added status. Thus their assigned place was that of adoptive nephew and this gave them regular access to the consultants as and when they needed it. The secretaries also indulged them in a similar manner.

The project was on-going from a systems building perspective for about nine months and this allowed me to slowly distance myself from the department. It gave me the opportunity to observe the changing relationships between the male researchers and the participants in the department and hear about this from the male perspective.

It was interesting to hear the male researchers discussing how the new integrated system should bring more control over the administrative staff. They had aligned themselves with the departmental manager who was experiencing problems with the staff.

They were also completely desensitised to the nature of the surgery that took place in Gynaeoncology, something that I could not reconcile.

4. Discussion

The previous section has presented a highly successful AR project (from the perspective of the hospital management and clinical consultants) but from the perspective of the researcher and the powerless research participants using a gender lens. The work has never claimed to be feminist in its approach but by using a gender lens, in this instance, is intended to develop a certain degree of sensitivity to gender aspects in research. This is certainly controversial and will most certainly be condemned as 'poor research' by many. Historically researchers in IS have been predominantly men and are generally unacquainted with gender issues. Even female researchers in IS can be affected by gender blindness. I now want to consider some salient points that have emerged from this research and discuss their relevance to action research.

Rigour versus relevance: There has been an emerging debate within the IS discipline concerning the legitimacy and relevance of qualitative research and in particular practice driven research. Wainwright (2000) succinctly captures this debate and provides insight into the North American view as opposed to the research community from Europe, Scandinavia and Australasia. The tension between opposing views is still apparent and consequently is affecting the manner in which such research is justified to the academic audience. I would argue that IS action research should embrace other epistemological and theoretical positions and then look for criteria of 'rigour' as defined there. Thus within AR the criteria of 'rigorous reflection' (Coghlan and Brannick, 2001; Reason and Bradbury, 2000) would become as important as trying to understand what had been learnt from the research.
From an academic IS perspective I was rigorous in my data collection; I had a formal research agreement; I had a theoretical perspective; I used AR in an iterative manner; I collaborated with the participants. However, I believe it is the story of the AR itself and its many interpretations that can provide insight into the problems and issues concerning organisational contexts.

Constructing reality in IS development: Generally speaking the story that emerges in AR projects on IS development is an accommodation of a number of realities as interpreted or constructed by the researcher (e.g. Chiasson and Dexter, 2001). Selectively the researcher analyses the data and presents a highly subjective view of what has taken place. Reflexivity needs to be applied to the data and to its interpretation to challenge all aspects of the project and explore issues to which the researcher may be blind. The concept of the 'lens' is one that has been applied in social science for some time (Mavin, 2001; Alvesson and Deetz, 2000). It is used within critical research to denote the shifting analytical attempt to see what could not be seen before and shows the researcher as positioned and active. Thus by using alternative lenses we are emphasising the political nature of empirical material and focusing on one particular aspect. Gender is not an issue that the IS research community is comfortable with and rarely appears in mainstream research. However, gender, patriarchal power and sexism was an integral part of this particular IS action research project and its negative force needs to be viewed no matter how uncomfortable this can be.

Giving a voice to the silent: In general, although we may be inclined to deny it, the 'voice' that is heard in AR projects is that of the powerful who have the resources to ensure the outcome that suits their purpose. In IS development the outcome may well be a new information system that serves the purpose of the management or the dominant group. Their story is told in the reporting of the research and may acknowledge the contribution power and politics made to the final result. However, by presenting the Gynaeoncology 'story' from a gender perspective we can begin to examine how patriarchal power can affect the lives of those involved in the research. We can see intimidation and silencing of opposing views – doctors and nurses frightened to speak out; replication of power structures within the administrative section through referential power. Through the use of alternate metaphors the researcher can linguistically provide insight into the experience of working in such an environment. It can bring emotion to the research which for some is inseparable from reason (Sköldberg, 1998; Gherardhi and Turner, 1987; Jaggar, 1989).

Giving a voice to silent majorities who have been dominated for too long is vital (Alvesson and Sköldberg, 2000). In IS projects this is particularly important as very often it is these people who are expected to utilise the new system on behalf of management. Their voice

is rarely powerful and when heard may be only used to echo the views of the dominant group or individuals. This is not necessarily a gender issue and can affect male workers as well as female. However, IS practitioners as well as researchers must try to recognise gender-related difficulties in projects and develop strategies to address them.

5. Conclusion

Portraying Action Research in a 'scientific' guise that can be carried out in a rigorous, impersonal and unemotional manner perpetuates the fieldwork mythology that by following a particular model scientific knowledge will emerge. Deep emotional involvement in a setting or issues related to gender can produce strong research interest and certain situations can be a cause of depression or pain. Gender norms within the chosen organisation shape the man's or woman's entry into the research setting, the research relationships and the permitted actions. It is imperative that the researcher embarking upon an AR project is as prepared as possible about the organisation and has information about gender roles in the culture. Additionally the researcher must also be better informed of the 'messy' nature of AR and that their project may be influenced by various factors that without reflexivity they will have difficulty understanding and explaining.

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