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ABSTRACT

IT practitioners work in a frantic business world, facing new and complex socio-technical arrangements. Their knowledge, mainly gained through previous experiences, is often an imperfect tool as the changing environment challenges previous assumptions or common wisdom. In this context, IS research has been accused, rightly or wrongly, of being irrelevant to practitioners. This paper, however, builds on the belief that IS research can help practitioners better understand and adapt to emerging situations. Contrary to the view seeing rigour and relevance as a dichotomy, it is maintained that IS researchers have a third choice; namely, to be both relevant and rigorous. The paper proposes ways in which IS research can contribute to easing the practitioners' burden of adapting to changes by providing timely, relevant, and rigorous research. It is argued that synergy between relevance and rigour is possible and that Grounded Theory methodology in combination with Case Analysis provides a good framework for rigorous and relevant research of emerging phenomena in information systems.

1 INTRODUCTION

The topic of rigour and relevance is an ongoing concern in the IS research community [Nissen et al., 1991; Robey and Markus, 1998; Senn, 1998; Benbasat and Zmud, 1999; Lee, 1999]. Fresh evidence of this concern include the March 2001 edition of the Communications of the Association for Information Systems, dealing with IS research relevance in response to a very "hot" discussion between members of the ISWorld community [Gray, 2001], and the recent full-house attendance at a panel debate on this topic during ICIS 2001 [Kock et al., 2001].

Mason [2001], based on Stokes [1997], argues that the quest for fundamental understanding and the considerations for practical use can be attained simultaneously. To achieve this, Robey and

Markus [1998] proposed the adoption of three research models: (a) *applied theory*, where existing theoretical models are used to study real and relevant problems from the practitioners' world; (b) *evaluation research*, where researchers evaluate a particular intervention against a set criteria based on objectives and consequences; and (c), *policy research*, where alternative solutions are evaluated against a set of criteria usually including cost, efficacy, or practicability; the main objective of policy research is to understand the policy-making process.

Adding to Robey and Markus'[1998] work, this paper proposes a fourth methodological alternative: *theory building research,* where the emerging theory helps explain what is going on in the field. This alternative is of particular importance when the focus is on emerging IS phenomena.

Thus, this paper aims at researchers simultaneously pursuing relevance and rigour in studies of emerging IS phenomena, usually in response to dual academic and industry objectives [Fernandez and Underwood, 2001]. By aligning these objectives, researchers can engage in 'mode 2' research [Gibbons et al., 1994]; that is, achieving synergy between academy and practice by producing relevant theories that can advance the academic knowledge and, at the same time, can be applied in practice.

IS researchers preoccupied with rigorous, relevant, timely, and realistic studies of emerging phenomena, will benefit from greater interaction between industry and academia. This interaction is important because it provides "appropriate research topics, funding, and more importantly access to data for research" [Kohli, 2001:2]. Access to rich sources of empirical data allows the observation of complex organizational environments where many important variables are at play. These variables are often difficult or impossible to replicate in experimental research—e.g., commercial arrangements, disparity of stakeholders' objectives, politics, culture, inter and intra-organisational issues, etc.

Obtaining access to rich data sources can be difficult, time consuming, and frustrating. However, the relevance of the research to the industry can help achieve access to rich data and higher cooperation from the participants. Evidence from the authors' own research suggests the participants' perception of relevance (or benefit) can contribute to the scientific value by providing more open accounts and wider access to what is really going on in the field (i.e., e-mails, documents, access to meetings, workshops, negotiations, etc.). Methodological rigour can then be applied to richer data resulting in academically sound research that is useful to professional practice.

The next sections briefly address the issue of studying emerging phenomena, describe a rigorous research approach for these studies, show how this approach can produce relevant research, indicate the particular demands and risks of taking this path followed by a conclusion to the paper.

2 STUDYING EMERGING PHENOMENA

One of the challenges in studying 'relevant' topics is that what is relevant from the practitioner's perspective is often related to emerging phenomena. Such topics are usually new; with little or no prior theoretical studies and/or frameworks on which to base research questions and approaches.

While existing theories may be applicable to new phenomena, almost by definition, emerging phenomena lack in theories grounded on empirical data obtained from real participants in the substantive field of the phenomena. For example, reviews of international information systems (IIS) applications in the literature tend to agree that past research into IIS is sparse, sporadic and diffuse [Lehmann, 2001]. These characteristics can also be observed in the study of emerging socio-technical IS project structures like metateams or virtual teams [Fernandez and Underwood, 2001].

Obtaining a good appreciation of temporal processes is a critical requirement when researching new organizational phenomena [Van de Ven and Poole, 1989]. To achieve this, researchers must (a) place the research in its social and historical context including people as active builders of their own physical and social reality [Orlikowski and Baroudi, 1991] and (b) seek to generate empirically valid theory by systematically exploring the new phenomena and its players in non-simulated environments aiming "to discover what is going on, rather than assuming what should go on" [Glaser, 1978:159].

Thus, selecting an appropriate research method to deal with the issue of lack of extant theories is a critical success factor in this type of research. As Truex [2001:2] suggested, "one way to assure greater relevance is to use methods that require relevance." In the next section, we present a rigorous research approach that effectively deals with studies of emerging phenomena.

3 ASSEMBLING THE RESEARCH APPROACH

Researchers facing a lack of applied research in their field need to employ research methods that do not rely on prior theoretical foundations. It seems prudent to derive the methodology by using the focus and nature of the research as a guide. There are three fundamental characteristics of research undertakings concerned with emergent information systems issues:

1) Information systems are *hybrids* of human, social and technical research objects [Kroenke, 1992].
2) The research objects are usually the interaction of technology, organisations, groups, and individuals; they do not lend themselves to quantitative measurement and require a *qualitative* mode of enquiry.
3) Because the research themes are new, researching them will involve *building new theory* rather than deductively extending existing ones.

Qualitative research methods have become accepted in IS research [Walsham, 1995] and have been in use in the social sciences for some sixty years. The 'hybrid' nature of the research object, however, makes it necessary for any selected methodology to be adapted to the specific demands of information systems research. Denzin et al. [1994] suggest five building blocks for structuring and classifying qualitative research:

1) The researcher's position within the research tradition.
2) Research paradigms and perspectives.
3) Research strategies.
4) Methods of data collection and analysis.
5) Interpretation and presentation of findings.

The following discussion deals with each of the 'building blocks' in turn.

As outlined above, the research object, albeit a *hybrid* of human and technology elements, is firstly a social entity. The research therefore follows the social sciences research tradition.

The research paradigm is determined by the position taken in its three constituent elements, namely *epistemology*, *ontology* and *methodology* [Guba and Lincoln, 1994]. The elements most suited for the study do not align themselves conveniently behind one dominant research paradigm. Because 'understanding' and 'sense-making' is essential in building new theory, in the nomenclature of Orlikowski & Baroudi [1991] the research paradigm most appropriate for the study would be *interpretivist* in its ontological and methodological position. However, often IS research is characterised by a virtual absence of researcher/research-object interaction (apart from the 'passive' interaction in interviews, observation and other data gathering activities). In these cases, a strongly *positivist* stance would be taken with respect to the epistemology paradigm employed.

The research strategy is similarly bifurcated: On the one hand, the research objective is one of '*fact-finding*', as in determining the characteristics of the phenomena under investigation. On the other, when it comes to establishing how the factors that make up this phenomenon relate to each other, the emphasis is on '*inference building*'. As the 'facts' to be found are likely to be complex, the appropriate method should be *case studies,* which Galliers [1991] recommends when there is a high degree of complexity. Denzin et al [1994] conclude that where inference building cannot rely on

pre-existing constructs from which theory can be derived, a *Grounded Theory methodology* should be employed.

Both Grounded Theory and Case Study use a multitude of data collection instruments and a variety of coding methods as the main data analysis tools. Whilst in traditional case study methodology there is no prescribed formula for interpreting findings and the interpretation of results is free-form, Grounded Theory sets down a stringent regime of rigorous steps for the interpretation and presentation of findings: coding (at two levels), theoretical sampling, memo writing and formal theorising are carried out jointly with the data collection. In this way, Grounded Theory is defined as "an inductive theory discovery methodology that allows the researcher to develop a theoretical account of the general features of the topic while simultaneously grounding the account in empirical observations of data" [Martin and Turner, 1986]. Thus, in Grounded Theory actions are interconnected and nothing happens in a vacuum.

Since it was first introduced in 1965, the constant comparative analysis method (CCM) has been a key concept in the development and understanding of Grounded Theory [Glaser, 2001]. CCM "makes probable the achievement of a complex theory that correspond closely to the data since the constant comparison forces the analyst to consider [all the] diversity in the data" [Glaser and Strauss, 1967:113-114]. Diversity is achieved by rigorous comparison between incidents and properties of a category, trying to observe as many underlying uniformities and diversities as possible. Furthermore, the CCM "especially facilitates the generation of theories of process, sequence, and change pertaining to organizations, positions, and social interaction" [Glaser and Strauss, 1967:114]. These theories are relevant to both IS researchers and organisations dealing with the processes under investigation.

It is critical to note that the CCM is used to rigorously produce conceptualisation *not* full description [Glaser, 2001]. Conceptualisation allows practitioners to easily re-apply and adapt the discovered concepts to their particular circumstances; and thus, making the research product simpler and more consumable (as suggested by Robey and Markus [1998]).

3.1 Grounded Theory and Case Study

While case study methods have become far more widely accepted in information systems research over the last decade, Grounded Theory research is still a distinct minority method for IS research.

The Grounded Theory method was first described by Glaser and Strauss [1967] and subsequently extended by Glaser [1978]. It consists of the following phases and activities:

1. The most elementary building blocks are individual incidents, also referred to as 'slices of data'. Including any element of data pertaining to the topic of the research, they are constantly compared with each other to identify commonalities in a process referred to as **Open Coding**. The commonalities are called 'categories' and are described in terms of their 'properties.'
2. This is then followed by a process of **Theoretical Coding**, where 'relations' are established, i.e. conceptualised interpretations of how the 'categories' interact with each other.
3. New data sources, incidents and other 'slices of data' are added to the study until the categories, relations and concepts are 'theoretically saturated', i.e. when "no additional data are being found [that can] develop [further] properties of the category" [Glaser and Strauss, 1967]. To distinguish this from representative sampling (as, for example, used in survey methods) this selection is called **Theoretical Sampling.**
4. The first sets of concepts are then **'densified'** into a coherent theory about the interactions and relationships between 'categories'. Using the theory, the data is often re-assembled and any stories are re-told, to see if the nascent theory 'works' – a procedure also used in other methods, as can be seen in Brown and Duguid's [1991] empirical study of organisational learning.

The result is then a **substantive theory,** which is applicable to the particular area of empirical enquiry from where it emerged. Classified as 'middle-range' theories; between 'minor working hypotheses' and 'grand-theories' [Glaser and Strauss, 1967], they carry inherent relevance only within the environment concerned, but can be readily enhanced, extended and/or modified.

Figure 1, illustrates the Grounded Theory cycle.

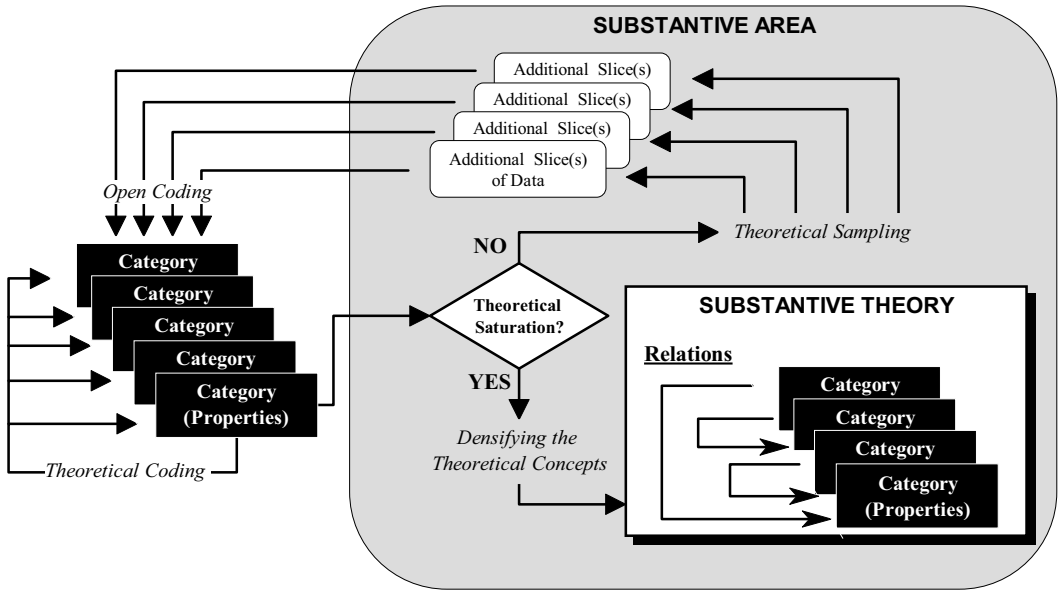

Figure 1. Steps and processes in building a Grounded Theory (based on Lehmann [2001]).

According to Eisenhardt [1989:546-547], using case analysis and case studies to build theory has three major strengths:

1) Theory building from case is likely to produce novel theory because "creative insight often arises from juxtaposition of contradictory or paradoxical evidence". The process of reconciling these accounts forces the analyst to a new *Gestalt*, unfreezing thinking and producing "theory with less researcher bias than theory built from incremental studies or armchair, axiomatic deduction".

2) The emergent theory "is likely to be testable with constructs that can be readily measured and hypotheses that can be proven false." Due to the close connection between theory and data it is likely that the theory can be further tested and expanded by subsequent studies.

3) The "resultant theory is likely to be empirically valid." This is so because a level of validation is performed implicitly by constant comparison from the start of the process. "This closeness can lead to an intimate sense of things" that "often produces theory which closely mirrors reality".

Whilst theory developed from case study is particularly appropriate in research of IS innovation phenomena, the researcher must exercise care to ensure that some of the canons of case study research do not distort true emergence for theory generation [Glaser, 1998:40-42]. For example, Yin [1994:28] states "theory development prior to the collection of any case study data is an essential step in doing case studies." This statement, perfectly valid for deductive case study research, contravenes a key tenet of grounded theory. Despite differences in *Weltanschauung*, however, the Grounded Theory method as described above, can be designed to match closely the requirements of case study practice, as set out by Yin [1994] or Walsham [1993]. Thus, we suggest that Grounded Theory can be used as an overarching methodology that accepts data from case studies as key building blocks but is not limited, or governed, by traditional case study methodology.

The *unit of analysis* is an *incident* (text string) in individual texts; such as an individual interview, observation or document [Van de Ven and Poole, 1989]. Cases represent an aggregated, networked collection of individual texts, forming the *case story*, a larger text in itself. Open Coding and

Theoretical Coding are then applied to the incidents as well as the case story. A two-layered cycle of theoretical sampling determines what new data is needed and where to get it.

Firstly, in **intra-case sampling,** texts and incidents are added from *within* each case until such additional data does not add anything new to the case story. If the theoretical constructs derived so far then need further 'saturation', a second round of sampling needs to occur. The next 'slide of data' is selected such that unsaturated categories, concepts and any theoretical propositions can be developed further. This process of adding incidents and cases is then repeated until the resultant theory is adequate, provides unambiguous understanding and exploration of its substantive environment.

This stepwise coding and sampling is extremely powerful in the generation of categories and conceptual constructs. Careful definition of the substantive area the theory should apply to, and constant re-focusing during the study is essential to avoid time-wasting 'over-scoping' of the grounded investigation. The analysis steps fall into four categories, each of which, in turn, relates to a specific class of output in the form of a theoretical element.

The first level of '*open coding*' yields the categories and their properties. Categories are key elements in theory building, they act upon each other forming 'relations'[1967]. While categories are directly grounded in observed fact, 'relations' are conceptualised by inference from the unfolding story to bring to it a temporal, correlational; or even causal order. In a study of an IT project in a multinational enterprise [Lehmann, 2002] 'open coding' showed that the 'categories' influencing the systems' development and implementation were the attitudes, beliefs and requirements of the relevant business people involved, characterised by the history and nature of the firm. Juxtaposed were the skills and attitudes of the IS people and their background, in a configuration of 'relations' akin to a Force-Field in Lewin's [1952] terms. '*Theoretical coding'* of the case story built from both sides' individual texts lead to the discovery of 'derivative categories', which further explained the relations. Two groups of 'concepts' (named Utility and Control) and 'constructs' (Power Play and Capability) emerged: One had to do with the fact that the business people could not see that the proposed system would have any practical utility in operational terms. They therefore suspected that the IS people used the system as a deception to impose greater control from the corporate centre. Lacking in business understanding and international know-how (facets of Capability), the IS people reacted to this resistance with political Power Play – which further deepened the business side's suspicions. The nascent theory had thus two focal points: The resistance to a new international IS seems to depend on its 'net-utility' over any control component, i.e. the less utility/the more control, the stronger the antagonistic tendencies and tensions in the force-field between business and IS. Secondly, the IS people's substituting inability with politics lead to a cyclically degenerative cause-and-effect-loop (in terms of Weick [1979]). At that point, the theory may now be written up in the form of a hierarchical set of *theorems* for each relevant and significant focal point/area of the theory. This will point to areas of weak empirical support and therefore direct the researcher to further theoretical sampling. In the case of the multinational IS example, more cases were then needed to add data about factors in successful projects and, to extend the substantive area, firms of different size and nature were preferable.

4 RELEVANCE AS A BY-PRODUCT OF THE RESEARCH APPROACH

Grounded Theory allows researchers to deal effectively with the important issues of bias and preconceptions, it provides a systematic approach that takes into consideration extant theory but it is not driven by it [Glaser and Strauss, 1967; Urquhart, 1997; Goleman, 1998; Sarker et al., 2001; Urquhart, 2001], triangulation is embedded in the methodology [Glaser and Strauss, 1967; Glaser, 1978; 1998], it values professional experience [Glaser, 1998; Urquhart, 2001], it can efficiently study emerging phenomena [Van de Ven and Poole, 1989; Lehmann, 2001; Urquhart, 2001], and it helps IT practitioners to better understand their own environment [Martin and Turner, 1986; Glaser, 1998]. Furthermore, Grounded Theory produces clear, logical and parsimonious theory that fulfils the canons of good science and simultaneously can be used in IS practice to explain and predict the constituent

phenomena of its environment. In other words, the researcher can produce theory-building studies "which are useful, relevant and up-to-date" [Partington, 2000].

To be relevant to the practitioner's concern, however, the theory needs to provide meaningful accounts for them. With Grounded Theory methodology, the researcher "can contribute a great deal by providing the [person] in the know with substantive theory" [Glaser, 1978:12]. By doing this, the researcher avoids stating the obvious to the expert; providing categories based on many indicators and showing ideas based on patterns. These conceptual ideas allow practitioners to transcend the limits of their own experience, adapting and applying the substantive theory to other situations. According to Glaser [1978:13-14], this provides the expert with six breakthroughs:

1) The ability to anticipate additional consequences, conditions and strategies of an act beside of what is empirically known to him or her.

2) The ability to expand the description and meaning of incidents, placing them in the greater scope transcending his or her experience.

3) As fewer concepts based in a multitude of incidents can be integrated in a theory, this makes the concepts easier to remember than incidents, increasing the expert's capacity to know.

4) The new theoretical knowledge allows the expert to expand his capacity to deal with new, more complex situations. This is done by progressive transference of conceptual knowledge to new situations, broadening the expert power by allowing faster organisation of the unknown by using the ideational tools provided by the substantive theory.

5) The theory can emancipate experts from the restriction of their specific expertise. Freeing them from the status quo. Theory allows experts to become more open to change us they begin to see the change process and how their ideas can be modified to handle new knowledge and new situations.

6) Seeing the empirical knowledge in a theoretical light allows experts to capitalise on the theory. The theory becomes part of the experts' common sense, sharpening his or her judgement by making visible the many variations in strategies, conditions and consequences.

Relevance for the grounded theorist means bringing tangible benefits to the experts. As Glaser said, when the field experts can understand and use a sociological theory by themselves "then our theories have earned their way. Much of the popularity of Grounded Theory to sociologists and layman [sic] alike is that it deals with what is actually going on, not what ought to go on" [Glaser, 1978:14].

The authors experienced a high level of participant cooperation while conducting Grounded Theory studies. We attribute this partly to (a) the open nature of the interviews; (b) our focus on experiences *as perceived by the actors*; and, (c) the methodology forcing us to act as very active listeners. More importantly, we provided practitioners with opportunities to articulate their thoughts about the issues *they* considered important. This articulation allowed them to reflect on particular events, gaining further understanding of past actions and acquiring new insights. Because they perceived our interviews as positive events, their attitude towards the research was more generous, resulting in better data acquisition. As a result, we were intellectually stimulated by our interaction with rich data, by the positive attitude of the participants towards to the research, and by a sense of contributing with our work to a wider audience.

5 DEMANDS OF GROUNDED THEORY

Every methodology poses particular demands and Grounded Theory is not an exception. The authors concur with the advice provided by Glaser [1978; 1998; 2001]; that is, the grounded theorist must:

1. tolerate confusion—there is no need to know *a priori* and no need to force the data;

2. tolerate regression—the researcher might get briefly 'lost' before finding his or her way;

3. trust emerging data without worrying about justification—the data will provide the justification if the researcher adheres to the rigour of the method;
4. have someone to talk to—Grounded Theory demands moments of isolation to get deep in data analysis and moments of consultation and discussion;
5. be open to emerging evidence that may change the way the researcher thought about the subject matter, and to act on the new evidence;
6. be able conceptualise to derive theory from the data; and,
7. be creative—devising new ways of obtaining and handling data, combining the approach of others, or using a tested approach in a different way.

We also believe that, in adopting Grounded Theory methodology, the IS researcher has to confront two further risks.

First, due to the minority status of Grounded Theory in IS research, it is likely for IS researchers, specially Ph.D. candidates, to experience what Melia [1996] described as *Minus-mentoring*—that is, learning from books, employing Grounded Theory for the first time without the guidance of a supervisor with practical knowledge of the methodology. Minus-mentoring could result in methodologically unsound studies [Stern, 1994; Glaser, 1998]. For example, studies claiming to be Grounded Theory when key tenets of the methodology have been breached (one of the risks of using Grounded Theory within a second, overarching, methodology). However, '*Minus mentees'* can reduce this risk by (a) networking with IS researchers conversant on the methodology; (b) reading the wide Grounded Theory bibliography [Urquhart, 2001]; and (c) participating in relevant discussion groups (i.e. IFIP WG8.2, the Grounded Theory Institute, or the Grounded Theory mailing list).

Second, Grounded Theory seems to be easier to use when the researcher is sensitive to the field under study. The authors, for example, have substantial experience as practitioners in the field of IS project management. This was perceived as a distinct advantage in eliciting information from participants in the same field and in understanding some of the more subtle issues in their studies. Without this sensitivity or '*verstehen'* [Weber, 1968], the fitness of the method to the researcher will need to be evaluated carefully and honestly in the light of the seven requirements above.

6 CONCLUSION

Grounded Theory provides the benefit of conceptual reflection based on real life accounts. Practitioners with frantic schedules often consider reflection a needed and yet unaffordable luxury. Reflection presented in the form of grounded substantive theory appeals to IS practitioners and contributes to the enhancement of the role and the perception of IS research in industry; contributing to future research collaboration between industry and academia.

In response to the renewed calls for relevance and the continuous need for rigour in IS research, Grounded Theory offers a valid alternative. We suggest that the application of Grounded Theory to cases with a hybrid social/technological focus can be constructed with a solid philosophical foundation. Furthermore, designing the methodology's processes can be done without violating the underlying Grounded Theory principles.

We believe that the potential of the Grounded Theory method for IS research is under-explored. More importantly, we suggest that, when the demands of the method are taken into account, Grounded Theory methodology can help researchers investigating emerging phenomena to simultaneously achieve rigour and relevance.

REFERENCES

Benbasat, I. and R.W. Zmud (1999). Empirical Research in Information Systems: The Practice of Relevance. *MIS Quarterly,* 23 (1), 3-16.

Brown, J.S. and P. Duguid (1991). Organizational learning and communities-of-practice: Toward a unified view of working, learning, and innovation. *Organization Science,* 2 (1), 40-57.

Denzin, N.K. and Y.S. Lincoln (1994). Introduction. In *Handbook of Qualitative Research* (Denzin, N.K. and Lincoln, Y.S. Ed.). Thousand Oaks, Calif., Sage Publications, 1-18.

Eisenhardt, K.M. (1989). Building Theories from Case Study Research. *Academy of Management Review,* 14 (4), 532-550.

Fernandez, W.D. and A. Underwood (2001). Metateams in Major IT Projects: A preliminary study. In *Proceedings of the Twelfth Australasian Conference on Information Systems*, (Finnie, G., Cecez-Kecmanovic, D. and Lo, B. Ed.), 217-224, School of Multimedia and Information Technology, Southern Cross University. Coff's Harbour, NSW, Australia.

Galliers, R.D. (1991). Choosing Information Systems Research Approaches: A Revised Taxonomy. In *Information systems research: contemporary approaches & emergent traditions* (Nissen, H.-E., Klein, H.-K. and Hirschheim, R.A. Ed.). North-Holland, Amsterdam, Elsevier Science Pub. Co., 327.

Gibbons, M., H. Limoges, S. Schwartzman, P. Scott and M. Trow (1994). *The new production of knowledge : the dynamics of science and research in contemporary societies*. Sage Publications, London ; Thousand Oaks, Calif.

Glaser, B.G. (1978). *Theoretical Sensitivity: Advances in the methodology of grounded theory*. Sociology Press, Mill Valley, Calif.

Glaser, B.G. (1998). *Doing Grounded Theory: Issues and Discussions*. Sociology Press, Mill Valley, Calif.

Glaser, B.G. (2001). *The Grounded Theory Perspective: Conceptualization Contrasted with Description*. Sociology Press, Mill Valley, Calif.

Glaser, B.G. and A.L. Strauss (1967). *The discovery of grounded theory: Strategies for qualitative research*. Aldine Publishing Company, New York.

Goleman, D. (1998). *Working with emotional intelligence*. Bloomsbury, London.

Gray, P. (2001). Introduction to the Special Volume on Relevance. *Communications of the Association for Information Systems,* 6 (Article 1), 1-12.

Guba, E.G. and Y.S. Lincoln (1994). Competing paradigms in qualitative research. In *Handbook of Qualitative Research* (Denzin, N.K. and Lincoln, Y.S. Ed.). Thousand Oaks, Calif., Sage Publications, 105-117.

Kock, N., P. Gray, R. Hoving, H. Klein, M. Myers and J. Rockart (2001). IS Research Relevance Revisited: Subtle Accomplishment, Unfulfilled Promise, or Serial Hypocrisy? In *International Conference on Information Systems*. New Orleans.

Kohli, R. (2001). Industry - Academia Interaction: Key to IT Relevance. *Communications of the Association for Information Systems,* 6 (Article 15), 1-4.

Kroenke, D.M. (1992). *Management information systems*. McGraw-Hill, New York.

Lee, A.S. (1999). Rigor and relevance in MIS research: Beyond the approach of positivism alone. *MIS Quarterly,* 23 (1), 29-33.

Lehmann, H.P. (2001). A Grounded Theory of International Information Systems. Unpublished Ph.D. Thesis. University of Auckland.

Lehmann, H.P. (2002). The Design of Information Systems for the International Firm: A Grounded Theory of Some Critical Issues. In *Global Information Technology and Electronic Commerce: Issues for the New Millennium* (Palvia, P., Palvia, S. and Roche, E.M. Ed.). Marietta, GA, Ivy League Publishing.

Lewin, K. and D. Cartwright (1952). *Field theory in social science : select theoretical papers*. Tavistock, London.

Martin, P.Y. and B.A. Turner (1986). Grounded Theory and Organizational Research. *The Journal of Applied Behavioral Science,* 22 (2), 141-157.

Mason, R.M. (2001). Not Either/Or: Research In Pasteur's Quadrant. *Communications of the Association for Information Systems,* 6 (Article 16), 1-12.

Melia, K.M. (1996). Rediscovering Glaser. *Qualitative Health Research,* 6 (3), 368-378.

Nissen, H.-E., H.-K. Klein, R.A. Hirschheim and I.F.f.I.P.T.C.f.I.S.W.G. 8.2. (1991). *Information systems research: contemporary approaches & emergent traditions*. North-Holland;

Elsevier Science Pub. Co., Amsterdam; New York

New York, NY, USA.

Orlikowski, W.J. and J.J. Baroudi (1991). Studying Information Technology in Organizations: Research Approaches and Assumptions. *Information Systems Research,* (2), 1-28.

Partington, D. (2000). Building Grounded Theories of Management Action. *British Journal of Management,* 11, 91-102.

Robey, D. and M.L. Markus (1998). Beyond rigor and relevance: Producing consumable research about information systems. *Information Resources Management Journal,* 11 (1), 7-15.

Sarker, S., F. Lau and S. Sahay (2001). Using an adapted grounded theory approach for inductive theory building about virtual team development. *Database for Advances in Information Systems,* 32 (1), 38-56.

Senn, J. (1998). The challenge of relating IS research to practice. *Information Resources Management Journal,* 11 (1), 23-28.

Stern, P.N. (1994). Eroding Grounded Theory. In *Critical Issues in Qualitative Research Methods* (Morse, J. Ed.). Thousand Oaks, CA, Sage Publications, 212-223.

Stokes, D.E. (1997). *Pasteur's quadrant: basic science and technological innovation*. Brookings Institution Press, Washington, D.C.

Truex, D.P. (2001). Three Issues Concerning Relevance in IS Research: Epistemology, Audience and Method. *Communications of the Association for Information Systems,* 6 (24), 1-11.

Urquhart, C. (1997). Exploring Analyst-Client Communication: Using Grounded Theory Techniques to Investigate Interaction in Informal Requirement Gathering. In *Information Systems and Qualitative Research* (Lee, A.S., Liebenau, J. and DeGross, J.I. Ed.). London, Chapman and Hall.

Urquhart, C. (2001). An Encounter with Grounded Theory: Tackling the Practical and Philosophical Issues. In *Qualitative Research in IS: Issues and Trends* (Trauth, E.M. Ed.). Hershey, PA, Idea Group Publishing.

Van de Ven, A.H. and M.S. Poole (1989). Methods for studying innovation processes. In *Research on the Management of Innovation: The Minnesota Studies* (Van de Ven, A.H., Angle, H.L. and Poole, M.S. Ed.). New York, Harper & Row, 31-54.

Walsham, G. (1993). *Interpreting information systems in organizations*. Wiley, Chichester, West Sussex, England ; New York.

Walsham, G. (1995). Interpretive case studies in IS research: nature and method. *European Journal of Information Systems,* 4 (2), 74-81.

Weber, M. (1968). *Economy and society; an outline of interpretive sociology*. Bedminster Press, New York.

Weick, K.E. (1979). *The social psychology of organizing*. Addison-Wesley Pub. Co., Reading, Mass.

Yin, R.K. (1994). *Case study research: design and methods*. Sage Publications, Thousand Oaks, CA.