Part II. Research methods, reference theories and information systems

5. The grounded theory method and case study data in IS research: issues and design

Walter D. Fernández, ***School of Business and Information Management, The Australian National University***

Abstract

While social scientists have been using the grounded theory method for almost 40 years, the IS field has been a late adopter of the methodology. Thus, even as grounded theory's importance as an IS research method has increased over the last decade, many misconceptions and misunderstandings about the method and its use still exist in our community. This paper presents important aspects of the Glaserian approach to grounded theory studies. The account is based on a personal perspective acquired from both doing grounded theory research and reading the wide grounded theory literature. Readers will benefit by gaining a deeper understanding of the approach, including its nature and benefits as well as its risks and demands. The objective of this paper is to help novice IS researchers interested in theory-building studies to grasp the complexity and nature of the method.

Introduction

Martin and Turner (1986, p. 141) defined grounded theory 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.'[1] In grounded theory everything is integrated; it is an extensive and systematic general methodology (independent of research paradigm) where actions and concepts can be interrelated with other actions and concepts – in grounded theory nothing happens in a vacuum (Glaser, 1978; Glaser and Strauss, 1967).

The grounded theory method offers 'a logically consistent set of data collection and analysis procedures aimed to develop theory' (Charmaz, 2001 p. 245). These procedures allow the identification of patterns in data; by analysing these patterns researchers can derive theory that is empirically valid (Glaser and Strauss, 1967; Martin and Turner, 1986). This is so because 'the theory-building process is so intimately tied with evidence that it is very likely that the resultant theory will be consistent with empirical observation'(Eisenhardt, 1989).[2]

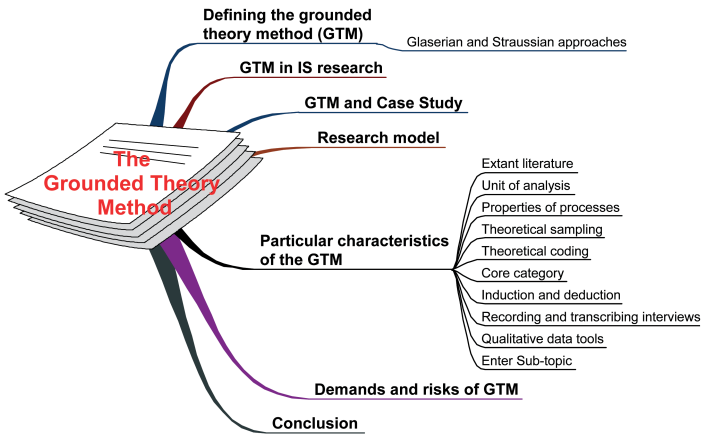
An excellent example of grounded theory in information systems research can be found in Orlikowski (1993), which won *MIS Quarterly's* Best Paper Award for 1993. Grounded theory allowed Orlikowski to focus on elements of context and process and on actions of important players associated with organisational change. This influential paper played an important role in making IS scholars aware of the usefulness of grounded theory for

[1] Grounded theory is also a deductive method.
[2] Grounded theory is (a) an approach consisting of methods and (b) a theory of research. In this paper, 'grounded theory' and 'grounded theory method' refer to grounded theory approach.

IS research. Since then, many IS researchers have successfully used and published grounded theory studies (e.g. Baskerville and Pries-Heje, 1999; Lehmann, 2001b; Maznevski and Chudoba, 2000; Trauth and Jessup, 2000; Urquhart, 1997; Urquhart, 1998; Urquhart, 1999; Urquhart, 2001).

While grounded theory studies still constitute a minority group in IS research (Lehmann, 2001b), the value of grounded theory has now become acknowledged within the IS field. This recognition reflects the tremendous progress of interpretive research from its insignificance in the 1980s (Orlikowski and Baroudi, 1991) to its current mainstream status in the IS community (Klein and Myers, 2001; Markus, 1997). However, the increased interest and adoption of the grounded theory method brings to the surface the issue of shortage of guidance on how to apply the method in IS studies. This paper contributes by providing an introduction to the method that focuses on (a) describing the use of the grounded theory method with case study data, (b) presenting a research model (c) discussing the critical characteristics of the grounded theory method, (d) discussing why grounded theory is appropriate for studies seeking both rigour and relevance, and (e) highlighting some risks and demands intrinsic to the method. Figure 5.1 illustrates the structure of the paper.

Figure 5.1. Thematic structure.



Background

The grounded theory method grew in importance and recognition over the years from the seminal work of Barney Glaser and Anselm Strauss (1967). These two sociologists come from different backgrounds and their collaborative work melds fundamental traditions in sociology (Glaser, 1978; Glaser, 1992; Glaser, 1998; Glaser and Strauss, 1967; Strauss, 1987; Strauss and Corbin, 1998).

On the one hand, Herbert Blumer, Evert Hughes and Robert Park trained Anselm Strauss in symbolic interaction at the University of Chicago's school of qualitative research, where Strauss was influenced by the pragmatist philosophical tradition (Charmaz, 2001; Glaser, 1998; Strauss and Corbin, 1998). On the other hand, Barney Glaser was trained in *quantitative* methodology and *qualitative mathematics* (a method in which mathematical expressions, such as those of statistical formulas, can be stated qualitatively) at Columbia University by Paul F. Lazarsfeld, an innovator of quantitative methods (Glaser, 1998; Strauss and Corbin, 1998). Glaser was also trained in theory construction by

Merton; particularly in theoretical coding, which Merton learned from Talcott Parsons and others (Glaser, 1998). Additionally, Glaser received training in explication of text at the University of Paris (Glaser, 1998).

The combination of the distinct backgrounds of Strauss and Glaser, while working together during the early 1960s, produced the *constant comparative method* later known as grounded theory (Glaser and Strauss, 1967). The founders of grounded theory continued to develop the method over the years independently of each other. Their separated paths led to what now is known as the 'Straussian' and 'Glaserian' versions of the grounded theory method (Stern, 1994).

Regardless of which specific grounded theory approach guides a particular study, there are important canons to follow for a study claiming the use of grounded theory. Dey (1999), based in Creswell (1998), produced a useful list of grounded theory tenets to introduce some of the basic beliefs behind grounded theory. Reflecting on these tenets, Urquhart (2001) emphasised two key beliefs of grounded theory: (a) the researcher has to set aside theoretical ideas; and, (b) the concepts are developed through constant comparison.

These two beliefs are fundamental building blocks of grounded theory. The first belief tells us that avoiding preconceptions is paramount in doing grounded theory. This point, which seems clear to the grounded theorist, usually puzzles the casual observer. How can a person put aside what she or he knows? The point made in the grounded theory literature is *not* that a clean slate is necessary or even desirable; the critical point here is that the research does not *start* with a theory to prove or disprove. With the Grounded Theory Method (GTM), when the researcher holds some deep-rooted beliefs, these can be captured as text and then analysed with other text as just another incident in the data (Glaser, 1978; Glaser and Strauss, 1967). The subsequent data analysis, through the constant comparison of incidents, will then falsify, confirm, or extend the applicability of the theory to the substantive area under study.

Furthermore, regardless of the particular approach one might adopt, without the concept of *constant comparison* grounded theory cannot be developed. Since its first publication in 1965, the constant comparative method has been a key concept in the development and understanding of grounded theory (Glaser, 2001)[3]. According to Glaser and Strauss (1967, pp.113-14), the constant comparative method facilitates the generation of complex 'theories of process, sequence, and change pertaining to organisations, positions, and social interaction [that] correspond closely to the data since the constant comparison forces the analyst to consider much diversity in the data.' This diversity is achieved by comparison between incidents and properties of a category, trying to observe as many underlying uniformities and diversities as possible.

The constant comparative method can be used to produce either conceptualisations or rich descriptive accounts. The conceptualisation versus description debate is at the heart of the difference between the Glaserian and Straussian approaches to grounded theory, which is discussed next.

The Glaserian and Straussian approaches

Methods evolve over time and often even their main exponents differ in their interpretation of the best way to evolve. This is indeed the case with grounded theory. The publication of 'Basics of qualitative research: grounded theory procedures and techniques'

[3]For a philosophical discussion on the constant comparative method see Glaser and Strauss (2001; 1967); for a procedural description see Glaser (1978; 1998).

by Strauss and Corbin (1990) and the highly critical public response from Glaser (1992) mark the emergence of an important schism in grounded theory, resulting in the 'Straussian' and 'Glaserian' models (Stern, 1994).

However, this paper does not aim to arbitrate on what Melia (1996) described as a war of words between friends. Indeed, I perceive both approaches as far more valuable contributions to qualitative researchers than the long epistemological discussions about them. Furthermore, many grounded theory IS researchers have already left this discussion behind and are concentrating on how the method can be improved, taught, and made more relevant to both academe and industry (among others, these include Cathy Urquhart, Hans Lehmann, David Douglas, Stefan Cronholm and Goran Goldkul).

Nonetheless, while accepting the validity of the two approaches, the discrepancies between them are substantial; especially in the use of Strauss and Corbin's 'axial coding' (Glaser, 1992; Kendall, 1999) and the form and nature of the theoretical outcome (Straussian full-description versus Glaserian abstract-conceptualisation). Consequently, researchers must opt for the approach more appropriate for their particular studies. My study followed the Glaserian approach because:

1. I was more interested in the conceptualisation offered by Glaser than on the full description of Strauss and Corbin. The Glaserian approach has a strong focus on abstract conceptualisations that are not concerned with people and time but tied to the substantive area of inquiry, which made it more useful to my study's particular goal; relevance to industry. In other words, a method focusing on conceptualisation offered a better probability of contributing to the experts in the substantive field; thus reducing the risk of telling the experts what they already knew.
2. The Straussian approach appears to be more useful for studies of individuals than studies involving organisational, political, and technical issues (Lehmann, 2001a, p. 9).
3. The preliminary literature review made me aware of practical problems reported by researchers in using the Straussian coding paradigm (e.g. Cronholm, 2002; Kendall, 1999; Sarker et al., 2000; Sarker et al., 2001; Urquhart, 2001).
4. The Glaserian approach is far less prescriptive and offers the flexibility of a number of potential coding paradigms, not just one.

In adopting a Glaserian approach I also selected the main methodological texts guiding the investigation. This was important to reduce both controversies and confusion (mine and my audience's). The main texts were:

1. *'The Discovery of Grounded Theory: Strategies for Qualitative Research'* (Glaser and Strauss, 1967),
2. *'Theoretical Sensitivity: Advances in the Methodology of Grounded Theory'* (Glaser, 1978), and
3. *'Doing Grounded Theory: Issues and Discussions'* (Glaser, 1998).

'The Grounded Theory Perspective: Conceptualisation Contrasted with Description' (Glaser, 2001) can also be consulted for a very extensive discussion contrasting the conceptualisation of grounded theory with the need for rich description of other qualitative data analysis methods.

Grounded theory and case study

While grounded theory is mainly used for qualitative research (Glaser, 2001), it is a general method of analysis that accepts qualitative, quantitative, and hybrid data collec-

tion from surveys, experiments, and case studies (Glaser, 1978). However, when combining methods like case study and grounded theory, utmost care must be exercised to ensure that the canons of case study research do not distort true emergence for theory generation (Glaser, 1998 pp. 40-2). For example, Yin (1994, p. 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 some case study research, contravenes a key principle of grounded theory. Therefore, when combining case study and grounded theory, the researcher must clearly specify which methodology is driving the investigation.

I used grounded theory as the overarching methodology to study data from an exploratory case study and to drive data acquisition activities within and outside the case study. Yet, the reason for using the grounded theory approach was consistent with the three main reasons suggested by Benbasat et al. (1987) for using a case study strategy in IS research, namely:

1. The research can study IS in a natural setting, learn the state of the art, and generate theories from practice.
2. The researcher can answer the questions that lead to an understanding of the nature and complexity of the processes taking place.
3. It is an appropriate way to research a previously little studied area.

Additionally, as I had professional experience in the substantive area of my study, grounded theory was an appropriate approach because it provided a method to deal with my experience, controlling the risk of introducing bias into the study. This control is achieved by the constant comparative method, which forces researchers to state their assumptions and their own knowledge as data (in the form of memos or self-interviews) and to compare these data with other data from the study. The constant comparison of incidents then validates, modifies, or rejects the expert researchers' observations. Thus, for researchers with professional experience in the substantive field of their research, constant comparison is a valuable feature of the grounded theory method. To be sure, constant comparison *reduces*, but cannot completely eliminate, the risk of bias-induced distortions.

For these reasons, seeking to generate theory grounded in case study data was a particularly appropriate strategy for my research. Furthermore, this approach has been tested and detailed by Eisenhardt (1989) and it is one of the preferred ways of doing grounded theory in IS research (Lehmann, 2001b; Maznevski and Chudoba, 2000; Orlikowski, 1993; Urquhart, 2001). According to Eisenhardt (1989), using case data to build grounded theory has three major strengths:

1. Theory building from case studies is likely to produce novel theory; this is so because 'creative insight often arises from juxtaposition of contradictory or paradoxical evidence' (p. 546). The process of reconciling these accounts using the constant comparative method 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' (p. 546).
2. The emergent theory 'is likely to be testable with constructs that can be readily measured and hypotheses that can be proven false' (p. 547). 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' (p. 547). This is so because a level of validation is performed implicitly by constant comparison, questioning

> the data from the start of the process. 'This closeness can lead to an intimate sense of things' that 'often produces theory which closely mirrors reality' (p. 547).[4]

Recent evidence shows that the combination of case studies and grounded theory has been rewarding for IS researchers. For example, Lehmann (2001a, p. 87) claims that:

> Applying Grounded Theory to Case Study was very successful. It produced a prolific amount and yielded a great richness of information. … The case settings, furthermore, contained more varied data than could be expected from individual, purely homocentric studies. Efficiency and abundance combined to make this method an exceedingly fruitful one.

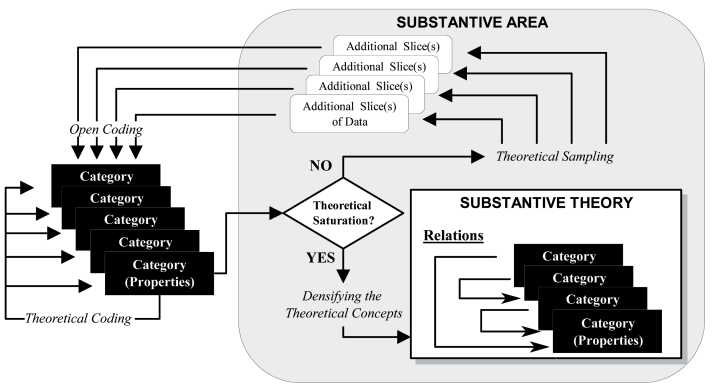
According to Dr Anne Persson (Department of Computer Science, University of Skövde, Sweden), 'I have to say that the combination of case studies and [Grounded Theory] has been very rewarding. I seriously doubt that I would have achieved my goal without that combination' (personal correspondence, 13 Sept. 2001, 08:27:38). My experience with the method further attests to these expressions of satisfaction.

Walking the research model

I acknowledge upfront the difficulty in explaining simply and correctly a method that 'happens sequentially, subsequently, simultaneously, serendipitously and scheduled' (Glaser, 1998, p. 1). The spiral, and at times simultaneous, nature of grounded theory is a powerful and satisfying feature of the research method; it allows flexibility and continuous sharpening of emerging constructs via deep familiarisation with data, validation, and progressive expansion of knowledge and skills. This nature is represented in Lehmann's (2001) research model.

Lehmann (2001a) describes the grounded theory process as a spiral that starts by collecting 'slices of data' in a substantive area of enquiry, which are then codified and categorised in a continuous process that moves toward saturation and results in the theoretical densification of concepts represented by a substantive theory. Figure 5.2 represents this iterative process.

Figure 5.2. Grounded theory's building process (Lehmann 2001a).

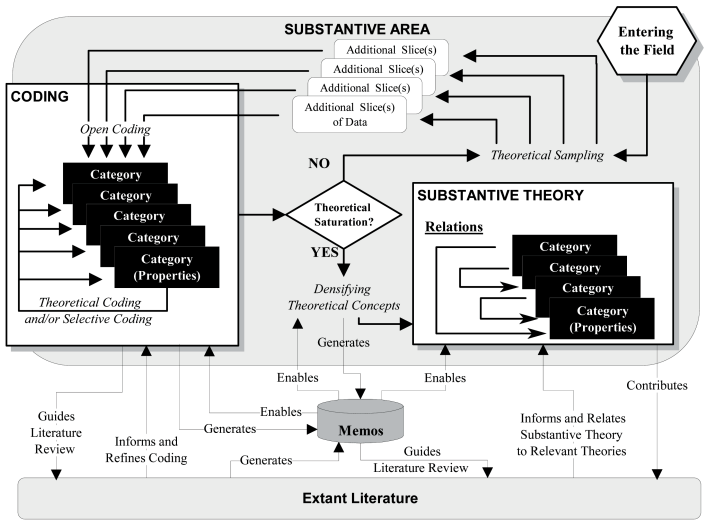


Although this model provides a good overview of the process of grounded theory, it fails to include the significant role of extant literature external to the substantive area in the formulation of the substantive theory, and the role of memos.

[4]These points are also in harmony with Yin's (1994) approach to case study.

To help explain the activities that developed the substantive theory in my study, I expanded Lehmann's (2001a) model, adding components from Eisenhardt's (1989) and from the Glaserian literature. By doing so, it is possible to present a picture (Figure 5.3) that includes the important role the literature played in my research and to acknowledge the key role of theoretical memos.

Figure 5.3. Expanded Lehmann's research model.



Entering the field is the first research action to be conducted in the context where the phenomenon is found. To enter the field I considered three important aspects:

1. First, following the grounded theory tradition, the study assumed that 'the problem' was to be discovered from accounts from people in the substantive area of enquiry. This contrasts with the need of other methods for precise research questions emerging from the literature review. The initial research question was as broad as possible and did not include *a priori* constructs or guiding theories. As I had a pre-research assumption regarding leadership as a main theme, this assumption was handled according to the method; that is, the researcher produced a 'slice of data' to be compared with others. However, this assumption was soon abandoned as a pattern different from the expected emerged.
2. Second, I had to address practical issues like crafting ethical protocols and obtaining approval, selecting the software and hardware required for interviewing and processing the data, producing transcription protocols, and training to administer leadership surveys.[5]
3. Third, entering the field included preparation work such as selecting an appropriate site, negotiating and obtaining access to the case, contacting participants and gaining their consent.

After entering the field, access was unrestricted and I became involved in *theoretical sampling*. Theoretical sampling was a data collection process that continued until the

[5]The surveys, MLQ and MLQTeam, were designed to measure the leadership style of the project manager and the project team. The purpose of the survey was twofold: (a) to measure a priori the leadership style of the team and of the project manager, based on a suspicion that leadership was a key issue; and (b) to have data from the survey to later compare with evidence from interviews if leadership emerged as a main concern (it did not). The surveys had the secondary goals of introducing the team to the research and to establish rapport. In this regard the exercise was successful.

very end of the research (including the write-up stage). This allowed me to take advantage of emergent themes, to acquire data continuously and to maximise observation opportunities.

All interviews were recorded in both digital and analogue forms. The tape recording was then transcribed and ATLAS.ti, a software application for qualitative data analysis, facilitated *open coding* and other coding activities.[6] Open coding involves 'running the data open'; that is, analysing the data to extract a set of categories and their properties. This is done by coding for as many categories as possible *without a preconceived set of codes* (Glaser, 1978). During open coding, I labelled the text of each interview, detecting new lines of enquiry, which guided subsequent data acquisition activity. Open coding generated 337 codes.

The writing of *theoretical memos* starts almost in parallel with open coding. Because memos are 'the theorising write up of ideas about codes and their relationships as they strike the analyst while coding' (Glaser, 1978, p. 83), memos are produced constantly in grounded theory, from the beginning of the analysis process until reaching closure, capturing the thoughts of analysts while they progress through the work. Memos raise the theoretical level via a continuous process of comparison and conceptualisation. They also provide freedom, flexibility, and enhance creativity (Glaser, 1978; Urquhart, 2001).

As codes and memos accumulated, I started to perceive relationships between them. This process, called *theoretical coding*, conceptualised the interrelation of substantive codes by generating hypotheses for integration into a theory. Therefore, theoretical codes emerged from open coding and theoretical memos, weaving a new story from the fragmentation of open coding (as suggested by Lehmann, 2001b). The grounded integration of concepts is a flexible activity that provides broad pictures and new perspectives. However flexible, theoretical codes *must* remain grounded on data, they cannot be empty abstractions. The concept of flexibility implies theoretical sensitivity to a number of possible coding paradigms, or coding families, consciously avoiding over-focusing on one possible explanation. Glaser (1978; 1998) provides a comprehensive (but not definitive) list of code families allowing for this flexibility.

The emergence of a pattern, in my study's case 'resolving conflicts', marks the beginning of *selective coding*. This process refers to delimiting the theory to one or two core variable(s) which act as a guide for further data collection and analysis (Glaser, 1978 p. 61-72). By doing so, the research focused on one of the several basic social processes or conditions that are present in the data. The delimitation of the analysis to those significant variables affecting the core variable contributes to parsimonious theory (Glaser and Strauss, 1967).

At this stage in the process, the role of the *extant literature* becomes very important because researchers need to acquire sensitivity and knowledge on grounded concepts. The literature is therefore read as a source of more data to be compared with existing grounded data. For example, in my study, readings about trust, shared mental models, conflict, psychological contracts, transaction cost economics, and organisational psychology raised the theoretical level and improved construct definitions (as suggested by Eisenhardt, [1989]). Most of these readings were outside the substantive area of research, yet they were made relevant by the actors' main concerns and the emerging theory.

[6] ATLAS.ti stands for 'Archiv fuer Technik, Lebenswelt und Alltagssprache' (archive for technology, the life environment and everyday language). The extension 'ti' stands for text interpretation. Technical University of Berlin's Project ATLAS (1989-1992) produced the first prototype of the software (source: http://www.atlasti.de/faq.shtml#acronym , accessed 20 October 2002).

The researcher achieves *theoretical saturation* when the main concern of the research can be accounted for, and further sampling fails to add significant value to the study through adding new categories or properties.

At this stage, when the theory becomes dense with concepts and enriched by relevant extant literature, the researcher has 'discovered' a *substantive theory*. Substantive theories are applicable to the particular area of empirical enquiry from which they emerged (Glaser and Strauss, 1967). They can be classified as 'middle-range' theories; that is, between 'minor working hypotheses' and 'grand theories' and they are relevant to the people concerned as well as being readily modifiable (Glaser and Strauss, 1967).

The objective of this section was to present an overview of the activities involved in this study. However, some concepts require further explanation, as discussed in the next section.

Particular characteristics of the method

While the grounded theory method has been in use for many years in the social sciences, it still has a minority status in IS research (Lehmann, 2001b). Thus, some critical and perhaps more obscure methodological aspects need to be discussed if one wants to dispel misconceptions. These characteristics are discussed next.

Role of the extant literature

As has already been mentioned, in grounded theory methodology the bulk of the literature review is conducted after the emergence of substantive theory. It is then, and not before, that data from the extant literature contributes to the study (Eisenhardt, 1989, p. 278; Urquhart, 2001, p. 366). The approach of reading the literature first with the objective of identifying gaps and relevant theories is opposite to the role that the literature has in grounded theory. Glaser (1998, p. 67) cannot be more specific in this regard:

> Grounded theory's very strong dicta are a) *do not do a literature review in the substantive area and related areas where the research is done*, and b) when the grounded theory is nearly completed during sorting and writing up, then the literature search in the substantive area can be accomplished and woven into the theory as more data for constant comparison (Glaser, 1998 p. 360:67).[7]

While uninformed observers of the grounded theory method may construe these dicta as a neglect of the literature (Glaser, 1998 p. 360), nothing can be farther from the truth. The purpose of the dicta above is to keep the researcher as free as possible of influences that could restrict the freedom required for theoretical discovery, not to ignore extant and relevant knowledge (Glaser, 1998). Adopting a grounded theory method commits the researcher to a rigorous and constant literature review process that occurs at two levels:

1. the researcher must be constantly reading in other substantive areas to increase their theoretical sensitivity, and
2. conceptual emergence forces the researcher to review convergent and diverging literature in the field related to the developing concept.

Because emerging theoretical construction drives the literature review, the extant literature is incorporated into the study as data. Therefore, most of the relevant reviewed literature will be presented, as it finds its way into, and becomes *integrated* with, the substantive theory. This closely reflects the nature of the method and the role and place

[7]Italic text in the original.

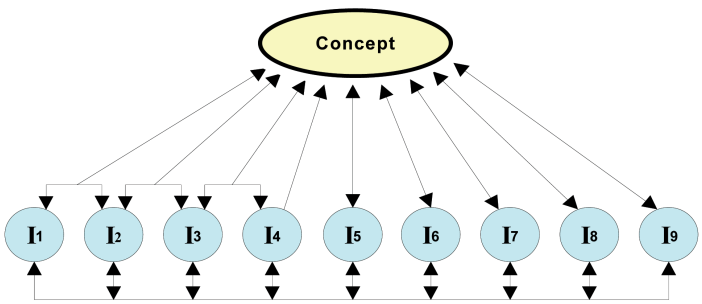
of the literature within it. Forcing a typical PhD dissertation's 'Chapter 2: Literature Review' would be incongruent with grounded theory and methodologically unsound, detracting from the true role of the literature in this type of research.

Unit of analysis

The *qualitative datum* is defined as a string of words capturing information about an incident; this incident (or unit of analysis) represents an instance of a concept coded and classified during the coding process (Van de Ven and Poole, 1989). The source of the datum may be a person, a group, a document, an observation, or extant literature.

Incidents are indicators of a concept. Figure 5.4 shows a model based on the constant comparison of indicators. In this model, the comparison of indicator to indicator generates a conceptual code first, and then indicators are compared to the newly emerged concept, further defining it. The constant comparison of indicators confronts the analyst with similarities, differences, and consistency of meaning, which result in the construction of a concept (or category) and its dimensions (Glaser, 1978).

Figure 5.4. The concept indicator model (Glaser 1978, p.62).



Incidents had many sources, from actors' accounts to field observations. However, interviews provided the study's most significant building block. These interviews focused on the client's core project team comprising the project manager and the associated team leaders, with multiple interviews over a period of time. The decision to include team members was based on the need to obtain a wide range of views from the people confronting the day-to-day issues and having similar (but not equal) level of responsibility in the IT project. This was important because:

> [g]rounded theory accounts for the action in a substantive area. In order to accomplish this goal grounded theory tries to understand the action in a substantive area from the point of view of the actors involved. This understanding revolves around the main concern of the participants whose behaviour continually resolves their concern. Their continual resolving is the core variable. It is the prime mover of most of the behaviour seen and talked about in a substantive area. It is what is going on! It emerges as the overriding pattern. (Glaser, 1998, p. 115)

Therefore, this study's focus on actions and accounts of actions is congruent with the assumptions of grounded theory. Furthermore, action occurs in a context and within a process enacted and constructed by the actors. Consequently, the study does not focus on properties of an actor or unit but on *properties of a process*. This is discussed next.

Focusing on properties of a process

My study centred on *properties of a process* not on properties of a unit (as a person, group, or organisation). Properties of a unit are more relevant to descriptive qualitative studies, while properties of a process are more relevant to studies aiming at theoretical conceptualisation (Glaser, 1978; Glaser, 2001; Glaser, 2002).

More specifically, the study's aim was to provide a theoretical conceptualisation of a basic social process (BSP). Basic social processes can be of two types: basic social psychological process (BSPP) and basic social structural process (BSSP). BSPPs refer to processes such as becoming (e.g. a nurse, a leader, a system) or inspiring (e.g. followers, peers) and are useful in understanding behaviours. BSSPs are concerned with social structures in a process such as centralisation, organisational growth, outsourcing, or recruiting procedures (Glaser, 1978).

BSPs are a type of core category (though not all core categories are BSPs) exhibiting the following characteristics (Glaser, 1978):

1. BSPs 'process out' at least two emergent stages that 'differentiate and account for variations in the problematic pattern of behaviour.'
2. BSPs may not be present in a grounded theory study (i.e. researchers may not have two or more stages in the central concept).
3. BSPs are ideally suited to qualitative studies where the analyst observes the evolution of a process over time (i.e. influencing outcomes in a project).
4. BSPs are labelled by a ground that reflects their evolving nature and a sense of motion (i.e. resolving, influencing, communicating, becoming).

As the second point above indicates, BSPs may or may not be present in a grounded theory study; their presence (or lack thereof) further guides the research design and execution. Therefore, understanding the distinction between doing unit or process based sociological analysis, is critical to the research design, regarding the particular demands they place on sampling, analysing and theorising (see Glaser, 1978, pp. 109-13, for a comprehensive listing of these differences).

Theoretical sampling

A basic question in case study research is concerned with the single-case versus multiple-case design of the study. In case study research, researchers determine *a priori* if the study is going to be single-case or multiple-case based, depending on the nature of the inquiry (Yin, 1994). Yet, under a grounded theory approach, that assumption could not have been made at the start of the research simply because at that stage it was unknown if the case would allow pattern detection and saturation. In grounded theory, sampling is driven by conceptual emergence and limited by theoretical saturation, *not* by design. As Glaser and Strauss (1967, p. 45) explain:

> Theoretical Sampling is the process of data collection for generating theory whereby the analyst jointly collects, codes, and analyses his data and decides what data to collect next and where to find them, in order to develop his theory as it emerges. This process of data collection is controlled by the emerging theory, whether substantive or formal.

Consequently, the selection of data sources is neither a random selection nor a totally *a priori* determination. For example, I decided *a priori* that a combination of data sources was most appropriate for this study. However, the specific details of what data was available and which datum was relevant depended on the emerging data.

Another critical *a priori* sampling decision was to control the variation by organisational delimitation while allowing for within-case diversity of access to multiple data sources. The sample was under the unifying influence of the cultural and organisational environment, which allowed controlling environmental variation while clarifying the domain of the research, as suggested by Pettigrew (1988).

One of the dangers in any type of research is to sample too superficially. To counteract this risk, the foundation case was selected because it provided the 'meatiest, most study-relevant sources' (a strategy recommended by Miles and Huberman [1994]). There were also opportunistic reasons to select the case. The selected project provided the best accessibility, as most people in the core project team were (usually) based in the same city in which I was located. This practical consideration was later proven critical as *in situ* observations gave me a better appreciation of what was going on and of what was important to the actors.[8]

As it happened, the single case was sufficient to provide enough data for the exploratory study, as Yin (1994) would perhaps have suggested. However, this was because the initial project resulted in a much richer source of data than first expected, with the project taking six times longer than expected to complete and presenting a substantial number of incidents for comparison and theory construction. While the argument presented by Yin (1994) for revelatory single case studies was *ad post* valid for my research, the validity of the single case study was based on the richness of the case. This richness allowed reaching conceptual saturation and thus permitted the closure of the grounded theory study, something I did not know *a priori*.

The core category: role and selection criteria

The objective of the research is to generate theory 'that accounts for the patterns of behaviour which is relevant and problematic for those involved' (Glaser, 1978, p. 93). To achieve this goal the analyst must discover the core category and delimit the investigation around it. The core category is the pivotal point for the theory; most other categories relate to it, and it accounts for most of the variation in pattern and behaviour. The core category 'has the prime function of integrating the theory and rendering the theory dense and saturated as the relationships increase' (Glaser, 1978, p. 93).

In my study, the core pattern was 'resolving conflicts', a basic process that engaged actors (people and organisations) in a series (pattern) of activities aimed at resolving incongruence and misunderstandings. Resolving conflicts is how managers of meta-teams (and the component teams) achieve project delivery. The core category in the resolving conflict pattern was 'trust,' which had a number of key interrelated categories that explained the core pattern.

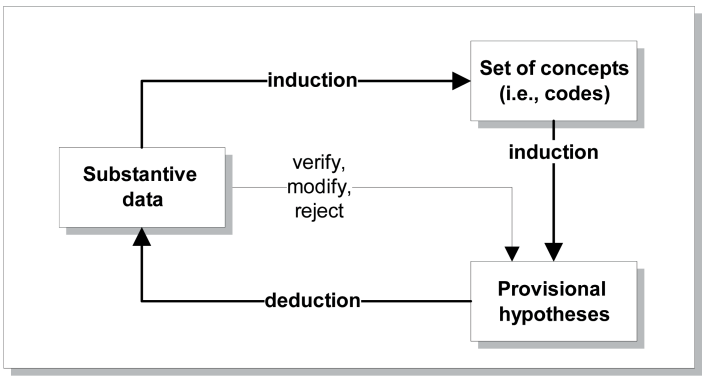
Induction and deduction

According to Glaser (1998), the notion of induction versus deduction is often an oversimplification of complex patterns of thought present in grounded theory development. While grounded theory is classified as an inductive method (e.g. Glaser, 1978; Glaser and Strauss, 1967; Martin and Turner, 1986; Strauss and Corbin, 1998), theoretical sampling is a deductive activity grounded in inducted categories or hypotheses. This acts as a virtuous circle where '[d]eductions for theoretical sampling fosters better sources of data, therefore better grounded inductions' (Glaser, 1998, p. 43). The difference

[8] *In situ* observations were important. One can listen to historical accounts of disagreements; however, listening to the somewhat heated discussion between two parties with conflicting interests in real-time, as I did, gives the researcher yet another perspective to compare.

between an inductive and a deductive method relates to 'pacing'; if the researcher looks at data first and then forms the hypotheses (inductive), or if the researcher forms the hypotheses first by conjecture and then seeks research data to verify the deduction (deductive) (Glaser, 1998). This cycle of induction and deduction is represented in Figure 5.5.

Figure 5.5. The inductive-deductive cycle of the grounded theory method.



Two practical aspects of the research facilitated both induction and deduction activities, namely: (a) recording and transcribing interviews, and (b) using a qualitative data coding and analysis tool. These activities are discussed in the next two sections.

Recording and transcribing interviews

All interviews were recorded using analogue and digital technology. The analogue tape was then professionally transcribed and turned into analysable text. I used ATLAS.ti as the main tool to code and analyse the data and to collect memos. For example, while proceeding through open coding of a particular interview for the first time, I would load the primary document onto ATLAS.ti and simultaneously play the MP3 version of the interview on my computer. This had two effects: first, it improved recollection and mental activity (the interview was recreated with sound, not just words), which increased the production of memos. Second, it allowed the correction of transcription errors that can be very frequent due to the jargon used by actors.

Glaser does not encourage the use of tape recording (Glaser, 1998). He argues that recording is unnecessary because the researcher is after important concepts and patterns, not precise accounts as in other more descriptive methods. Therefore, for conceptualisation purposes the actual words are not as significant as they belong to one of many possible units in a process. Another perceived problem with recording is that it becomes time consuming and inefficient for this type of research. Interviews are often taken for transcription and then corrected, causing the analysis of many non-important parts. Glaser is very conscious of wasting time in what he considers superfluous activities.

However, I was convinced at the beginning of the study that recording the interviews was appropriate and necessary. Consequently, I decided to: (a) take a few notes during the interview; (b) do post-interview notes when required; and (c) record the interviews. This extra effort was justified as a risk mitigation strategy. By taking notes, I could then use these notes to record memos or to guide my next interview while the previous one was being transcribed. Furthermore, waiting for transcriptions was seldom necessary as I was able to control my pacing thanks to having open access to actors and data.

As Glaser predicted, the extra time involved in open coding full interviews, rather than coding just the important concepts, was substantial (ranging from 40 to 60 hours each for the first few one-hour interviews to eight to 20 hours each for the last few). However, this also allowed me to relive the interviews and the detailed analysis helped me to acquire a deeper understanding of the issues. This understanding facilitated the emergence by discovery of the core concept and made me, the researcher, more comfortable with the coding activity.

It is probable that without recording and coding literal transcriptions I could have saved some time; however, listening to the actors often triggered theoretical memos and facilitated the finding of relations – therefore, it was a productive activity, not a wasteful one. Moreover, listening and reading the interviews matched my cognitive style and therefore facilitated emergence.

While I found re-listening to the interviews and analysing the full text very rewarding and interesting, it must be recognised that Glaser is correct in his assertions – neither recording nor taking extensive notes are necessary activities for conceptualisation.

Nevertheless, not recording is too risky a strategy for a PhD student to follow. Above and beyond fulfilling the need for evidence in a PhD study by recording and transcribing interviews, researchers can revisit and re-code text as more evidence emerges and patterns are detected. The ability to have access to the full transcription and to replay the interview at any time is a distinct advantage, especially in studies of organisational cases that are conducted over a long period of time, at different points in the life cycle of the analysed phenomena. In any case, the iterative nature of grounded theory demands the constant comparison of incidents with already collected data. In doing this, previously undetected incidents are likely to emerge. These new incidents benefit the study and therefore justify the extra effort required to record, transcribe, and code potentially irrelevant data.

Using qualitative data coding tools in GTM research

Glaser (1998, pp. 185-6) also alerts against the 'technological traps' of data analysis tools such as NVivo or ATLAS.ti because they create unnecessary restrictions, inhibit the researcher's development of skills and impose time-consuming learning curves. Glaser perceives computing technology as an easy way out and as a hindrance rather than an aid to creativity. This is not my experience. Yet computing tools can be used in many ways and some of those ways will indeed have the negative consequences Glaser has mentioned.

Using ATLAS.ti in my study for open coding and memoing was a substantial advantage. It provided a fast way of checking and comparing incidents and the flexibility of exporting data to other tools as I perceived appropriate. The software's ability to collect memos allowed the efficient writing, analysis, and retrieval of memos at any time in the process. It is also true that ATLAS.ti was not everything I needed. I used additional techniques and tools: butcher's paper and a whiteboard to draw box diagrams representing the interrelation of emerging concepts; notepads and flowcharting software to draw many diagrams; a word processor to combine and analyse sets of incidents and memos; and mind-mapping software (MindManager) to organise ideas and themes.

Therefore, Glaser is correct in asserting that this is creative work, yet the generalisation that technology restricts creativity was falsified by this study's experience, as people

familiar with computers do creative work with them and around them.[9] ATLAS.ti did not impose a significant learning curve; the software was found to be intuitive, the tutorials took a day to do – and after that I did not need to refer to the software manuals. Working with ATLAS.ti was not different from working on paper, yet retrieving and connecting concepts was extremely easy and efficient.

Finally, while ATLAS.ti has some automated coding facilities (i.e. coding all occurrences of a word or phrase), coding was done entirely manually, reading the text line by line while endeavouring to explain the incidents. Automatic coding is a disadvantage for the grounded theorist as it obscures the discovery of what is going on in the text; in this regard, Glaser's reservations are fully justified.

Demands and risks of grounded theory

Every methodology poses particular demands and grounded theory is not an exception. I strongly concur with the advice provided by Glaser (1978; 1998; 2001), based on his own experience and discussions with other grounded theorists, that 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 – researchers might get briefly 'lost' before finding their 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 as well as moments of consultation and discussion;
5. be open to emerging evidence that may change the way the researcher thought about the subject matter, and be willing to act on the new evidence;
6. be able to conceptualise to derive theory from the data. This is perhaps the most important risk, as some people may experience difficulty conceptualising what is going on in the field; and
7. be creative in devising new ways of obtaining and handling data, combining the approaches of others, or using a tested approach in a different way.

Additionally, 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 that IS researchers, especially PhD candidates, will experience what Stern (1994), 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 (Glaser, 1998; Stern, 1994). This has happened, for example, when studies claiming to be based on grounded theory have breached key tenets of the method (one of the main risks of using grounded theory within a second, overarching, methodology). However, *'Minus-mentees'* can reduce this risk by (a) networking with IS researchers conversant with the methodology; (b) reading the 'Grounded Theory Bibliography' (Urquhart, 2001); and (c) participating in relevant discussion groups (e.g. IFIP WG8.2, the Grounded Theory Institute).[10]

Second, grounded theory seems to be easier to use when the researcher is sensitive, through having professional experience or knowledge, to the field under study (Glaser,

[9] It has to be acknowledged that my familiarity with computers as work tools did make a difference in the usability of qualitative data analysis software. I would also suggest that the familiarity people in the IS area have with technology cannot be assumed in other areas of research, such as social sciences, where the bulk of grounded theory studies are conducted.
[10] Minus-mentoring was resolved in my case by the addition of an external supervisor with excellent practical experience on grounded theory (as well as following the strategies recommended here).

1978; Glaser, 1998; Glaser and Strauss, 1967). This sensitivity facilitates understanding or *'verstehen'* (Weber, 1968). My substantial experience as a senior practitioner in the field of IS project management was a distinct advantage in eliciting information from participants in the same field. This experience facilitated the understanding of some of the more subtle issues in the study.

There is also the risk of finding something that is not new. What if this has been done before? This appears to be more a natural fear than a probable risk. To be sure, it is possible to study some emerging organisational phenomena just to come up with a theory that already exists in the literature. Yet this is unlikely. If the study is conducted as the method indicates, diligent researchers should have included the relevant literature (convergent and divergent) and detected variations and particularities. As Thomas Kuhn (1962, p. 30) said: 'It is a truism that anything is similar to, and also different from, everything else'. A good grounded theory study should be able to point out similarities and differences, and to produce patterns that are particular to the substantive field of the research. Yet, as with any methodology, and indeed any human activity, there are no certainties.

Lastly, a grounded theory emerges through intensive intellectual action. Researchers need to interact with their data and while this interaction is often highly rewarding and satisfying, it is also extremely intensive, time- consuming and all absorbing, and the researcher must be persistent and resilient (as also attested by Urquhart, 2001).

Conclusion

The literature describes several virtues of the grounded theory method. Grounded theory allows researchers to deal effectively with the important issues of bias and preconceptions, and provides a systematic approach that takes into consideration extant theory but is not driven by it (Glaser and Strauss, 1967; Goleman, 1998; Sarker et al., 2001; Urquhart, 1997; Urquhart, 2001). Triangulation is embedded in the methodology (Glaser, 1978; Glaser, 1998; Glaser and Strauss, 1967). GTM values professional experience (Glaser, 1998; Urquhart, 2001). GTM can efficiently study emerging phenomena (Lehmann, 2001a; Urquhart, 2001; Van de Ven and Poole, 1989). GTM helps IT practitioners to better understand their own environment (Glaser, 1998; Martin and Turner, 1986). Furthermore, grounded theory can produce 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 phenomena in its environment. In other words, researchers can produce theory-building studies 'which are useful, relevant and up-to-date' (Partington, 2000).

To be relevant to practitioners' concerns, the theory needs to provide meaningful accounts for them. With the grounded theory methodology, researchers can significantly contribute by providing the knowledgeable person with theory grounded in their field of work (Glaser, 1978) that has been enriched by conceptualisation and extant literature from multiple sources (Eisenhardt, 1989; Glaser, 1998). By doing this, researchers can avoid stating the obvious to the expert and instead provide 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.

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

Furthermore, research that focuses on actors' perspectives provides actors with opportunities to articulate their thoughts about issues *they* consider important (Glaser, 1998). This articulation allows participants to reflect on empirically significant events (to them), gaining further understanding of past actions and acquiring new insights.[11]

I experienced a high level of participant cooperation while conducting my grounded theory study. This can be partly attributed to the open nature of the interviews, the focus on experiences *as perceived by the actors*, the method forcing me to act as a very active listener, and my being perceived as an 'insider' to whom the accounts did not require too much 'proper lining'.[12]

Consequently, I was intellectually stimulated by interacting with rich data, by the participants' positive attitude towards the research, and by a sense of contributing to a wider audience. This positive feedback helped to counteract the heavy demands grounded theory poses on researchers, as previously described. These demands are real; they should not be underestimated by those contemplating the adoption of the grounded theory method. But when these demands and risks are satisfactorily addressed, grounded theory offers a very strong methodological foundation for IS researchers wanting to engage in theory-building studies of emerging socio-technical phenomena.

[11]Incidents in which actors called me to 'run a few ideas through you' are evidence of this perception of value. They wanted to articulate their thoughts, and even when I kept a passive role in the conversation, only asking questions to clarify the problem, they felt that the conversation helped them.

[12]'Proper lining' is a term used by Glaser to describe the distortion often found when actors present aspects of their world (e.g. own person, group, organisation) to an outsider; this is caused by the actors' perception of what constitutes a 'proper view' of their world. Proper lining is a useful concept; when detected, it may tell us of an actors' perception (and importance of this perception) regarding how the external world should be looking into their context.