Why are there not More Grounded Theories in Information Systems Research?

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Abstract

Theories indigenous to the information systems discipline are scarce. The Grounded Theory method is specifically aimed at creating 'grounded theories' in domains where no prior ones are. However, although its use in information systems research increased over the last two decades, the number of grounded theories created did not. This could be because either the Grounded Theory method is not 'right' for the information systems discipline or that it is not 'done right'. The paper investigates both options and concludes firstly that the method is 'right'. As a general method, capable of accepting any kind of data, Grounded Theory works well with information systems, which are viewed as actor networks of technology and people. There is, however, often a misunderstanding about what the Grounded Theory's core tenets are and how to apply them. It is shown that the coding regime used is not unique to Grounded Theory. Its two core tenets are defined as the maxims of data collection jointly with analysis and that of theoretical sampling until saturation. The Grounded Theory method's paradigmatic position (or, more accurately, its lack of one) is discussed. It is concluded that Grounded Theory, is only 'right' for Information Systems if it's done 'right'.

Keywords: Grounded Theory, Qualitative Research methods, Triangulation.

Introduction

Theories, together with the methods and skills to build them, still seem scarce in the Information Systems (IS) discipline. A decade ago Bob Zmud (1998), then Editor-in-Chief of MISQ, issued a call for more 'pure-theory' contributions to the journal. Ron Weber (2003) had to repeat his predecessor's call because there had still been 'much more … written about theory testing than theory building'. He pointed out that too many theories in IS research are 'borrowed and adapted from other disciplines – perhaps a manifestation of our need to build theories in domains where no prior theories exist', a sign that 'as members of a discipline, we [information systems researchers] still need to improve our theory building skills' (Weber 2003). Whilst there are many ways to build theory, in 'domains where no prior theories exist' qualitative, and initially inductive, theory creation methods seem intuitively a natural fit. One of those, the Grounded Theory Method (GTM) is specifically geared to 'discover' social theory from empirical data sourced in a wide range of contexts and activities.

Why is GTM not Successful in Generating IS Specific Theories?

There could be two possible explanations for this: Firstly, GTM is not 'right' for IS, with its mix of technological and social phenomena; and/or secondly; GTM is not done 'right'. Already in the mid-1990s misuse of GTM was commented on (e.g. Bryman & Burgess 1994 and Locke 1996). A recently updated analysis (Lehmann, Urquhart & Myers) of a decade of IS research papers that profess to have used GTM confirms this.

In order to generate good theory, the essentials of the GTM process need to be first understood and then followed. If they are not, then the outcomes will be conceptually weak, theoretically inconclusive or, in extremis, just plainly meaningless.

In order to explore these questions further it is necessary to first provide a brief overview of the GTM. It is then necessary to consider if the GTM is 'right' for IS, and to explore how one is expected to perform GTM 'right'. Only then can we debate the real issue confronting IS researchers: If GTM is intended as a tool for theory development, why do the majority of studies fail to produce this outcome?

A Brief Overview of GTM

There are various definitions of the grounded theory method, this from the creators themselves:

'[GTM is] the discovery of theory from data – systematically obtained and analysed in social research' (Glaser & Strauss 1967:1).

The Grounded Theory method described in the 'Discovery of Grounded Theory' (Glaser & Strauss 1967) was the first synthesis of the two opposing worldviews in social science: Glaser, who came from Columbia with a heritage of 'scientific' thinking in sociology, complemented Strauss's Chicago-style emphasis on understanding and explaining of social phenomena. The outcome was an 'inductive technique, grounded in the data to an extent that would convince 'hard-nosed' quantitative researchers of the soundness of the approach' (Gibbs 2002:165).

As more researchers started to use GTM, it soon became evident that many found the required high degree of creative conceptualising difficult. Then Strauss, with one of his students, published a detailed, procedural 'how-to guide' to GTM (Strauss & Corbin 1990). Glaser, however, virulently opposed their heavily procedurised method critiquing it as restrictive to the point that it actually inhibits the emergence of a 'theory' (Glaser 1992). With two versions of GTM available (labelled 'Glaser' and 'Strauss'), its use spread fast and wide. By 1994 influential opinion considered it to be 'probably the most widely employed interpretive strategy in the social sciences today' (Denzin & Lincoln 2000:382).

This qualification of GTM as a 'social research' method, however, raises the question: How suitable is GTM for researching information systems, when the identity of IS as a social discipline (among other issues) is still being debated?

'Right' for Information Systems Research?

Numerous definitions of an information system have been postulated. Kroenke (2008:6) proposes an updated actor-network (AN) model involving hardware, software, data, processes and people; with an interdependency between the technical and organisational elements of the 'package'.

An analysis of 177 articles published between 1990 and 2000 in Information Systems Research (Orlikowski & Iacono 2001), however, found that this notion of information technology as an organic fusion of technology

and organisation had not been reflected in reported IS research. Instead, five isolated 'views of the IT artefact' seemed to guide IS research. Figure 1 places the 'views of the IT artefact' into the contexts of the AN model.

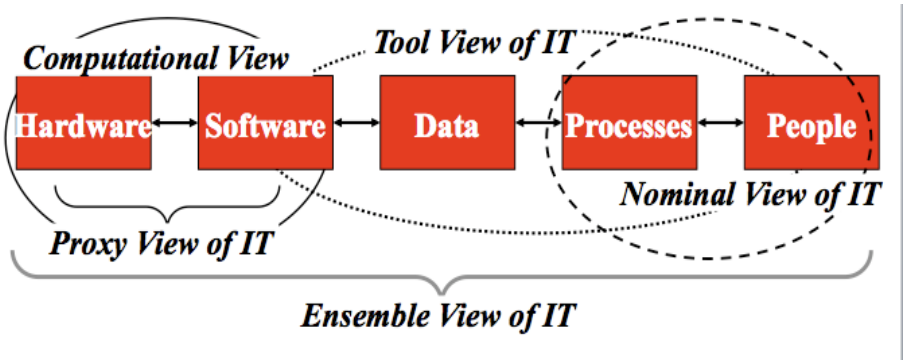

Figure 1: Views of the Technology, Processes and People in the Information Technology Artefact (following Orlikowski & Iacono 2001; and Kroenke 2007)

The 'nominal' and 'computational' views both treat the technology or the organisational applications as a 'black box'. These accounted for about half of the research investigated. Researching how technology facilitates ('tool' view) or influences organisational goals ('proxy' view) makes up two fifths of the papers. Research into how all components of an IS function together, the 'ensemble' view, was only attempted by 12% of the studies – and only 4% were about 'Technology as Embedded System' where all parts of the AN were given equal research focus.

The analysis did not cover why and how this came about. It is plausible, though, to postulate that the restrictions imposed by specific methodologies had something to do with it: the realist approaches used in the investigations of the 'computational' and 'proxy' views are not very suitable for the organisation-oriented views. Conversely, the interpretivist/ constructionist methods used there were not a useful fit for technology-focused research. In contrast, in an analysis of recent studies that purport to have used GTM (Urquhart), it was found that more than half had attempted to build theories within the 'embedded' version of the 'Ensemble' view of information technology. This may well be attributed to the fact that GTM is

a 'general method' (Glaser 1998), where the 'slices of data' gathered can be about any actant in the IS-AN under investigation, and can refer to any relationship in the theoretical constructs 'discovered'.

A domain neutral method such as GTM could thus well answer the challenge for 'more work to be done from an ensemble view [in two directions]: developing conceptualisations and theories of IT artefacts; and incorporating [them] expressly into our studies … [irrespective] of any particular perspective or methodology' (Orlikowski & Iacono 2001:130). Such extensions to the original method are, however, legitimate only if they preserve the essence of GTM.

The 'Right' GTM?

When it was developed GTM's major difference to other qualitative methods was its rigour – the key to ensure that emerging theories are as close a fit to the data as possible and that they work to understand, explain and predict the phenomena under investigation. But much of what is seen to characterise GTM is not unique: If we can sift out those elements common to other qualitative methods then we can highlight the underpinning of the rigour inherent in the method.

There are two common characteristics in social science research methods, namely: the three-step research sequence and the coding of text. Firstly, GTM follows the traditional three-step research sequence of any social science method, as described by Stoller: 'I 'gathered data' and once the data was arranged in 'neat piles', I 'wrote them up'. (Stoller & Olkes 1987:227). While this may be challenged by some researchers, the basic sequence seems to be an immutable axiom for most conclusion-oriented investigative activities. Secondly, the 'coding' of the data - which can be any 'text' - happens at the exact same three levels of depth as in all social research. Miles and Huberman (1994:57) label them as follows:

- initially, commonalities in the data are captured in 'descriptive' codes to clearer capture the essential aspects of the phenomenon;
- next, as more data and codes are available, 'interpretive' codes are abstracted from the concrete incidents to help understand what is going on 'behind' the data;

- lastly, inferential 'pattern' codes, now abstract of space and time, are conceptualised that are explanatory and often predictive.

The nomenclature of GTM is different: Glaser and Strauss (1967) talk of 'categories' and their 'properties' instead of 'codes', but also recognise their development in 'open' coding first, then in 'theoretical' coding, followed by 'selective' coding to reduce the number of concepts that make up the final theory. Strauss and Corbin, as well as Charmaz have their own labels, as well as some interim steps, but these are only immaterially different from the three universal coding levels (see Table 1 for a comparison).

<table>
<tr><th>Generic 'Coding' Levels</th><th>Glaser & Strauss (1967)</th><th>Strauss & Corbin (1990)</th><th>Charmaz (2006)</th></tr>
<tr><td>Descriptive</td><td>Open Coding</td><td>Open Coding</td><td>Open Coding
Focused Coding
Axial Coding</td></tr>
<tr><td>Interpretive</td><td rowspan="2">Theoretical Coding</td><td>Axial Coding</td><td rowspan="2">Theoretical Coding</td></tr>
<tr><td>Pattern</td><td rowspan="2">Selective Coding</td></tr>
<tr><td></td><td>Selective Coding</td><td></td></tr>
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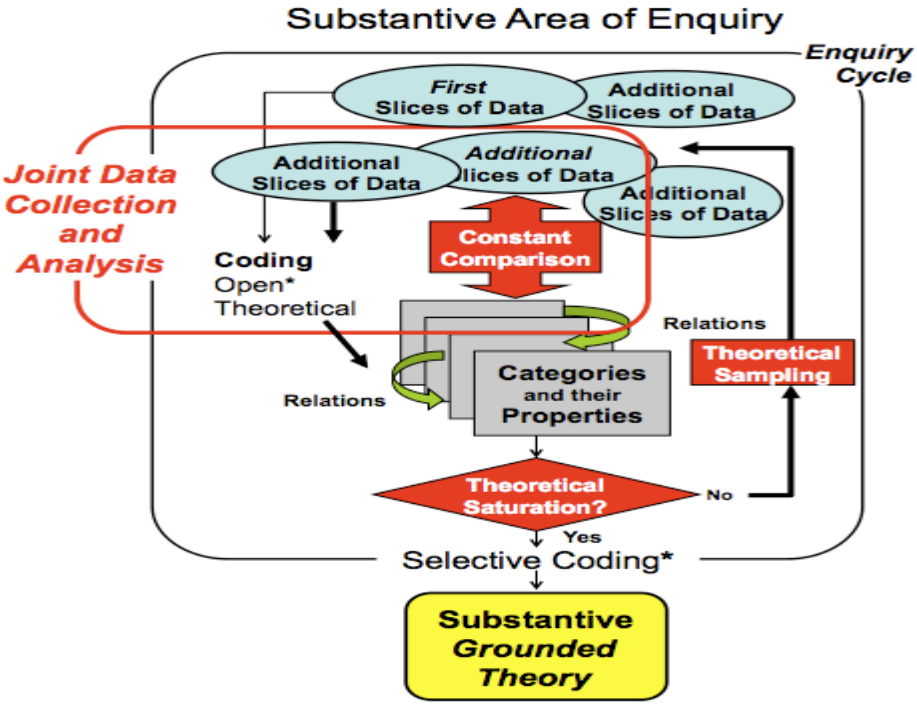
Table 1: Relation of different GTM coding classifications schools to levels of abstraction in generic coding levels of qualitative data analysis (after Miles & Huberman 1994)

The use of these generic methods of social research clearly does not set GTM apart from other qualitative social research. So what does?

GTM incorporates a 'constant comparative method of joint data collection and analysis' (Glaser & Strauss 1965). This has two stringent rules: Firstly, data gathering and data analysis are undertaken together, not sequentially; and secondly, this analysis is a constant comparison of every new slice of data with the conceptual content of every other slice of data, with the intent to generate new abstract categories or to enhance the properties of existing ones.

In the 'Discovery', two years later, the method was completed by stipulating how to collect the next slice of data – and when to stop collecting: After each round of analysis the 'next slices of data' are selected using theoretical sampling, i.e. the nature of the conceptual constructs in hand (e.g. clarity, completeness, scope) determines what next slice of data is required to enhance (clarify, extend, or densify) the present constructs; and lastly, but most importantly, the cyclical iterations only end when new slices of data cannot enhance the conceptual constructs any further, i.e. when they are theoretically saturated. Figure 2 illustrates the sequence of activities in the GTM cycle and highlights the parts that are specific and unique to the method.



* Here 'Strauss' and Charmaz vary from 'Glaser'

Figure 2. Sequence of activities in the GTM

This approach to sampling is fundamentally different from many other social research methods. Furthermore, and most importantly, there is no pre-set sample size - data gathering only stops when there is nothing more new to be learned about the categories and their relations, i.e. the nascent theory.

There are thus really only two essential characteristics that define GTM, namely,

1. The constant comparison of all existing conceptual constructs with every instance of new data, jointly with their collection;
2. Theoretical sampling for new slices of data until, and always until, theoretical saturation of the nascent theory is reached.

Both these 'core analytic tenets' must be met otherwise it is impossible to 'reasonably assess how the data were used to generate key conceptual categories' and the research should not profess to use the GTM (Suddaby 2006:640).

But is the use of GTM possible for researchers who follow different paradigms – does GTM have a paradigmatic bias? The next section endeavours to get to the bottom of these considerations.

Paradigmatic Comments

Because GTM use is not contingent on any specific view of 'the world' it is fully compatible with (post)positivist and interpretivist stances, be they objectivist, constructivist, or critical (when such knowledge is deemed instrumental for social emancipation and justice) or participatory (which adds a practical dimension to the critical stance). GTM's core tenets simply prescribe a way of developing a theory that has the closest possible relationship to the data it 'emerged' from. The method is entirely independent of the nature of the data or the nature of the abstractions incumbent researchers assign to them. GTM neither prescribes a specific ontology or epistemology, nor does it limit the researcher's freedom to choose whether they consider data to be naively or critically real or a subjective, transactional and/or a relativistic construction.

The original ignition point for the discussions about GTM's paradigmatic classification was the role of induction versus deduction in the

method. In the first instance GTM is an inductive method and has been named that by its founders from the very beginning. Because induction is often (and myopically) equated with interpretivist paradigms GTM has been labelled that, too. On the other hand, it has been argued that GTM's distinction between empirical base and derived abstractions may be dualist, which eo ipso characterizes GTM as (post)positivist (Annells 1996). As a positivist method, however, GTM would be strongly (and equally myopically) associated with the deductive development and verification of hypotheses – which is toto orbe from GTM, and vehemently so (Glaser & Strauss 1967:2).

The resolution of the argument is that GTM does both. The cycle alternates between inductive and deductive logic as the research proceeds. The initial abstracting of concepts from the data is inductive, but deductive work is used to derive from induced codes the clues and directions for where to go next in the theoretical sampling stage. This fusion of approaches is termed 'abduction'. Its definition is 'The process of forming an explanatory hypothesis. It is the only logical operation which introduces any new idea …. Deduction proves something that must be, Induction shows that something actually is operative, Abduction merely suggests that something may be' (Peirce 1903:216). Kathy Charmaz, an original student of both Glaser and Strauss, (Charmaz 2000) in a detailed investigation eventually reconciled the long-running objectivist/constructionist schism among grounded theorists and set out a guide on how to discover grounded theory for either paradigm family (Charmaz 2006).

GTM is thus a neutral research procedure and inherently multi-paradigmatic. This insight should be emancipatory; allowing researchers to develop theories from within their methodological paradigm(s). While this is the case, the challenge of the GTM is inherently the creative demands it places on the researcher. The process of exploring the data on hand, and determining the successive iterations of data to collect, is inherently challenging as it depends on the ability of the researcher to create meaning from the data. It is at the level of exploring links between codes (nodes or categories) that this is most difficult. Being inherently multi-paradigmatic it does not exist in 'conflict' with another paradigm, but is able to be teamed in a complementary fashion, to provide more clarity in the process. To complete the discussion of GTM as a tool for theory development in IS, it thus becomes necessary to consider the use of triangulation (mixed or

multiple method research) as a catalyst to further enabling theory development.

Bridging the Creative Divide

Accepting the hybrid view of IS as mixed-actant ANs is one thing. Using GTM in IS, however, requires an extension of the method. 'Glaser' and 'Strauss' methods were explicitly grounded in research about the interactions between individual human actors in predominantly non-business sociological settings. Researching the IS 'Ensemble' needs a wider focus on interactions between groups of people and technology, all embedded in organisations. Practically, the fact that an IS researcher needs to consider such a wide focus, requires a pragmatic research approach: A mixed or multiple method approach may be most conducive to theory development with GTM, with its neutral paradigm, being complemented by another research method.

The triangulation of findings from different research approaches allows the situation to be viewed, and studied, through different analytical lenses. Triangulation can involve four distinct planes of interest, namely: the theoretical approach chosen, the research methods, the data source, and participating or referenced researchers (Fielding & Schreier 2001; Hilton 1999; Kleining & Witt 2001). The distinct form a particular triangulated study takes depends on how the researcher chooses to combine the planes of interest, and the choices available within each plane (Kelle 2001; Quilling & Blewett 2003).

Triangulation has been represented in different ways, but central to this discussion is the fact that triangulation focuses on the integration of different perspectives to produce a more complete picture. 'Triangulation is less a strategy for validating results and procedures than an alternative to validation … which increases scope, depth and consistency in methodological proceedings' (Flick 1998 as discussed in Kelle 2001). He stresses though, that in this understanding of the term, each method on its own should be able to provide an explanation of the phenomenon. As such the term 'triangulation' should be considered to be a metaphor for the methodological process rather than a specific approach (Cupchik 2001; Kelle 2001; Knox 2004; Steiner 2002; Zinn 2002).

The value of triangulation is that it suggests the use of alternative ways of exploring phenomena: When facing a creative chasm while applying the GTM a researcher may feel there is little guidance available in terms of determining the next data to be collected or patterns emerging. Self-doubt can be a challenge and clarity may seem elusive: Is the data really saying that? By referring to another methodological stance it may be possible to gain a new perspective of a potential 'next step' in the research process.

IS contexts, located within organisations, are typically investigated using a case study methodology. One way of achieving an ensemble approach using GTM (Lehmann 2005:166-167) starts with conceptualising all the individual slices of data (technical and organisational) within one organisation and then amalgamating them into one contiguous narrative (the 'case history'). This then forms a second-order 'text' from where further conceptualisations now progress. Theoretical sampling thus first ranges within-case to maximise the theoretical depth and density of the case story. The resulting theorems of what 'happens in the case' are then applied to theoretical sampling between-cases to move the overall theory - of what 'happens in the substantive area' - forward. A combination of a case study and GTM can provide insight into how the data can be explored for meaning, and theory developed.

In areas where little is known about the subject it may be useful to supplement traditional qualitative data (such as focus group interviews) with data received from surveys, as a part of the model building process. This approach was employed in a study considering the impact of the disciplinary culture of individual team members on the workings of a multidisciplinary student team (Quilling 2008). Initial theory development was based on the perspective provided by 13 IS project development teams' members (4-5 students per team). Findings from the analysis of a survey of 108 individuals who constituted the same class; thus incorporating a significant number of the students who would already have been represented in the focus group interviews, were added as further data.

While it is important to consider the philosophical underpinning of methodologies, which are to be used together, it has already been shown that GTM lends itself to this form of research due to its neutral position. In addition, the additional insights the researcher may gain from changing methodological perspective may greatly enhance the creativity they bring to the data, by providing alternative ways to 'see' the data.

Conclusion

This paper has explored the relevance of GTM as an appropriate research methodology for application in the IS discipline. It has underlined the fact that GTM's main point is the rigour with which it anchors conceptual conjecture in data to give it legitimacy as a theory. GTM's proven applicability to divergent disciplines rests on its generality – data can come from any source This makes it the right choice for fundamental research in IS, which is an actor network of technical and people actants. Right choice is one thing – doing GTM the right way is another: It was then necessary to clarify that the essential elements of GTM are joint data gathering and constant comparison on the one hand and theoretical sampling and saturation on the other. This has helped to correct the common misconception that coding in a specific way constitutes GTM – it does not, whatever fancy name the different coding levels may have been given – coding is common to other social science methods as well. The second quality that makes GTM useful for IS is its paradigmatic neutrality – researchers of the technology part of the IS can apply a positivist approach and investigations where people and organisational aspects are in the foreground may use a constructivist lens, but both would use the same basic process of grounding their concepts in the data. The discussion of paradigmatic neutrality concluded that abduction logic best describes the GTM approach to distilling meaning from phenomena. This straddles most of the paradigmatic stances represented in social science. Finally, it is this neutrality, which allows it to be teamed with other research approaches in a mixed- or multiple- method study (triangulated study). Two examples are provided to illustrate how this may aid in bridging the creative gap – that space where the researcher only has themselves to rely on - when trying to interpret what the analysis may be suggesting.

Concluding: GTM is a useful method to create theory in domains where few exist. It is, however, not formulaic – it requires creativity. It is not easy – it requires knowledge of the field and method skills. It takes you where no-one has been before – this makes it risky. Yet like with everything high risk - occasionally there can be high reward.

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