

Grounded Theory in Information Systems Research – from Themes in IS Discourse to Possible Developments

Completed Research Paper

Göran Goldkuhl

Department of Management &
Engineering, Linköping University,
Sweden

Department of Informatics & Media,
Uppsala University, Sweden
goran.goldkuhl@liu.se

Stefan Cronholm

School of Business and IT,
University of Borås, Sweden
Stefan.cronholm@hb.se

Abstract

The grounded theory approach (GT) has been applied in qualitative research in information systems for a long time. Besides many papers that report results from such applications, there exist also many papers that discuss research-methodological issues concerning GT. This paper investigates the literature on GT-methodological issues in IS. The presentation is structured in six themes of the IS/GT discourse. These are: 1) GT variants, 2) GT and research paradigms, 3) GT and guidance, 4) usefulness of GT in IS studies, 5) the influence and use of pre-understandings in the GT research process, 6) the character of a grounded theory or other GT research outcomes. Conclusions are drawn from this review and based on these conclusions two suggestions are given for further development of a grounded theory approach in IS research. These suggestions are: 1) an enhanced action perspective with adapted conceptualizations for the IS research context to be used as support for analysis of data, 2) a clarification of a balanced interaction between inductive data analysis and use of extant theories in theory formation. These suggestions are grounded in pragmatist foundations that are apparent in original and evolved Straussian GT.

Keywords: Grounded theory, qualitative research, pragmatism, data analysis

Introduction

For qualitative research in information systems (IS), the grounded theory approach (GT) has been used for several decades. There exist early applications, such as Calloway & Ariav (1991), Toraskar (1991), Pries-Heje (1992), Orlikowski (1993) and Cronholm & Goldkuhl (1994). GT was developed by the two sociologists Glaser & Strauss (1967) and it has since its inception been used widely for qualitative research in many disciplines; mainly, but not restricted to the social sciences. GT is characterized as an inductive approach for data analysis and theory development. Categories and theories are built from empirical data as the main source. Collected data are inspected and categories are generated through a “constant comparison” approach. It is vital that preconceived categories and hypotheses are avoided in the collection and analysis of data. The data analysis process should be conducted continuously and iteratively in relation to data collection. Data analysis and theory development are divided into different procedural steps. Strauss & Corbin (1998) distinguish between three coding steps: 1) Open coding (i.e. the formulation of categories

based on analysis of data), 2) axial coding (i.e. putting the coded categories together in structures), and 3) selective coding (i.e. a process of integrating and refining theory).

The two originators, Glaser and Strauss, took partly different routes in the further development of the GT method. This gave rise to a split between the two originators. Glaser (1992) accused Strauss to be a renegade from the true GT method. The main schism seems to be concerning the use of coding templates in data analysis. Strauss & Corbin (1998) emphasized the use of an action-oriented “paradigm model” in the phase of axial coding. Glaser (1978; 1992) argued for a broader use of different “coding families”.

Besides the two GT variants of the originators, as Glaserian GT (Glaser, 1978; 1992) and Straussian GT (Strauss, 1987; Strauss & Corbin, 1998), it has emerged other variants of grounded theory, e.g. constructivist GT (Charmaz, 2014) and situational analysis (Clarke et al., 2018). Another related approach is multi-grounded theory (MGT); see Goldkuhl & Cronholm (2010; 2018). In MGT, it is argued that other grounding sources are needed besides empirical data. Three different grounding processes are described and advocated: empirical grounding (based on empirical data), theoretical grounding (based on other theoretical sources) and internal grounding (creating a conceptual cohesion of the emergent theory, i.e. grounding in itself).

In several areas of IS, there exists research based on the grounded theory approach. During the years, there has also been a lively discussion on methodological matters; we will give exhaustive references to such discussions in the text below. There exist discussions for example on motives for GT use, how to relate GT to different research paradigms, how to apply GT in IS, how to interpret different methodological guidelines and rules, and how to understand experiences from GT use. This lively discussion is an indication that there exist un-settled issues and concerns on how to interpret and use the GT approach in IS research. We see a great potential in using GT in IS research as do many other scholars; e.g. Birks et al. (2013), Urquhart & Fernandez (2013), and Wiesche et al. (2017). To reach such a goal, we need to resolve unsettled issues and concerns, clarify possible uses and adapt GT better to typical research tasks within IS. Our driving question for this study is: *Can we find and elaborate conclusions on how to improve GT use in IS research from studying the methodological discourse?*

We will thus in this paper follow up and analyze essential parts of these methodological discussions. Through a review of IS/GT literature, we *identify different themes* in these discussions and use them as a basis for *proposing some advancements* of qualitative research in IS, based on principles from grounded theory. Our purpose is thus to give *suggestions for improvements of GT research in IS* and these suggestions will be informed by a thorough review of the GT-methodological discourse within IS. This review is thus a means to fulfill our purpose. However, we claim also a value of this the review in itself. It should be *useful* for IS scholars *to navigate in the IS/GT method discourse*. We will in this paper present two possible directions of how to improve GT use in IS. These suggestions form a basis for further research on these topics.

This paper has a focus on qualitative research in IS and the use of GT. Elements of GT can also be used in quantitative studies (Glaser, 2008) and in mixed methods studies (Walsh, 2015). This is, however, outside the demarcated scope of this paper.

We use throughout this paper the abbreviation GT, which stands for “grounded theory approach”. Several authors use often the abbreviation GTM (grounded theory method) for this in order to distinguish it from “a grounded theory”. However, we will never use the abbreviation GT to mean “a grounded theory”, which obviates any ambiguities.

Themes in grounded theory IS discourse

Literature review procedure

We have reviewed literature concerning methodological discussions on GT within the IS discipline. There exist several such papers with a direct focus on methodological issues; some of them with a philosophical orientation, others with a more practical focus. In several papers on GT applications, there exist also valuable methodological reflections based on experiences. There are several papers, among those that we have investigated, which include reviews of GT-papers in IS-related research; see Matavire & Brown (2013), Seidel & Urquhart (2013), Vaast & Walsham (2013), Stol et al. (2016) and Wiesche et al. (2017).

We have elaborated and applied a literature review procedure for this purpose. This procedure has been developed with inspiration from qualitative, interpretive and argumentative review approaches such as Hart (1998), Onwuegbuzie et al. (2012), Wolfswinkel et al. (2013), and Boell & Cecez-Kecmanovic (2014). This means also that we follow a concept-centric analysis approach rather than an author/publication-centric approach (Webster & Watson, 2002). We have also been inspired by coding procedures from grounded theory (Strauss & Corbin, 1998), and from pragmatic inquiry thinking (Dewey, 1938).

We divide the literature review into two main phases: 1) Search and selection, 2) interpretation, assessment, and synthesis; confer similar division in Hart (1998) and Boell & Cecez-Kecmanovic (2014). These two phases have been performed iteratively. The literature review should be seen as a part of a larger research inquiry process (Dewey, 1938). It is purposefully driven by a research problem and associated knowledge needs (Wolfswinkel et al., 2013; Boell & Cecez-Kecmanovic, 2014). The review perspective and purpose are gradually refined during the review process as the understanding of the topic continually unfolds (ibid). The aim of the literature review is to capture and interpret arguments and discourses within a demarcated topic and to reconstruct and present these in more coherent ways. The aim is also, based on such a reconstruction, to further such discourses through assessment and argumentation to new insights and conclusions (Hart, 1998; Boell & Cecez-Kecmanovic, 2014). A literature review is thus part of a discourse development: *To interpret, reconstruct and assess arguments and discourse in order to contribute to a restructured and expanded discourse.*

The way to conduct a literature search is often characterized as applying different search filters in order to select an adequate literature sample in direct relation to the study of the literature. However, our search has mainly been conducted in a longitudinal fashion. We have a great interest in qualitative research methods in IS (including GT) for more than two decades. Consequently, we are well acquainted with methodological discussions within IS on qualitative research including GT. This means that we have continually gathered articles and books in this area for a long time. This longitudinal literature search has been complemented with focused searches in direct relation to this actual literature review. We have used Google Scholar to reach a broad range of potentially relevant literature. We do not find it appropriate to limit searches to top journals since we want a broad inquiry into the scholarly knowledge base (Webster & Watson, 2002; Onwuegbuzie et al., 2012). A follow-up of pertinent literature references has of course been an important tactic in our literature search; i.e. what is usually called citation tracking or snowballing (Boell & Cecez-Kecmanovic, 2014).

Articles from this broad sample have continually been selected and prioritized for review based on partial and close reading. Our initial inquiry focus on detecting needs for improvement of GT use and the emergent themes (see below) have guided the selection process. The second phase with interpretation, assessment, and synthesis (i.e. reading and writing) has followed an elaborate procedure of six iterative steps:

1. Interpreting and extracting: Reading and interpreting publications with a curious mind and a critical eye. Generating extracts that are pertinent from review perspective and purpose. Extraction can consist of 1) selecting quotes that are representative for main ideas and 2) formulating summary notes and other comments.
2. Coding: Formulating apt phrases for extracts adapted to the review perspective and purpose.
3. Comparison: Developing a further understanding of the topic by comparing extracts, codes, and publications.
4. Abstraction: Generating themes that organize extracts and codes into such overall thematic categories. Grouping extracts/codes according to formulated themes.
5. Argumentation: Developing and enacting a line of argumentation through formulation of a coherent text based on extracts, codes and (re)reading of publications. Some selected quotes may be integrated into the text to substantiate the argumentation and enhance transparency.
6. Concluding: Condensing the written text into summary conclusions and formulating development needs and ideas.

Through this review process, we extract discourses from each relevant paper and integrate its views and arguments into an overall structured discourse on GT in IS as presented in the following. This means that a thorough reading of each selected and prioritized paper is needed in order to capture the papers' topics and argumentation that is assessed as relevant for our emergent "review inquiry". In this literature inquiry, we have aimed for a combined approach of being conceptual-analytic, evaluative (including both

appreciative and critical), argumentative and constructive (Hart, 1998). The literature review process, with its sub-processes of search, selection, reading and writing, was terminated when considered saturated (Strauss & Corbin, 1998; Wolfswinkel et al., 2013; Boell & Cecez-Kecmanovic, 2014).

One important result from this literature review is thus the formulation of important themes in the methodological discourse on GT in IS. These themes represent different focus of GT use. However, these themes are not isolated from each other. There are clear relations between them, which can be seen from our textual presentation below. The following six themes have emerged through our review:

1. GT variants
2. GT and research paradigms
3. GT and guidance
4. Usefulness of GT in IS studies
5. The influence and use of pre-understandings in the GT research process
6. The character of a grounded theory or other GT research outcomes

GT variants

Talking about *the* grounded theory method entails nowadays an ambiguity. It is no longer one demarcated method as in the inception of GT (Glaser & Strauss, 1967). It is rather a *family of methods* (Bryant & Charmaz, 2007; Matavire & Brown, 2013; Seidel & Urquhart, 2013). In a study of GT use in IS, Matavire & Brown (2013) identified four types of GT methods. Besides the two obvious ones (Glaserian GT, Straussian GT), they identified one GT approach, labeled “analytical” and one approach labeled “mixed method”. The analytical approach means a selective and flexible use of some of the GT procedures without adhering to the overall strategy of GT. The mixed method approach means using GT together with some other research approach (e.g. action research or case study research). In their sample, nearly half (44%) of the GT applications used the flexible/analytical approach; one quarter used Straussian GT (24%) and one quarter used the mixed method (24%). Only a small portion (8%) used Glaserian GT. In a later investigation (Wiesche et al. 2017), it was found that Straussian GT was the far most applied GT method (81%) and Glaserian GT was only applied by 9%.

After the publication of Strauss & Corbin (1990), Barney Glaser took a very strong position against the way GT was described in this book. Glaser (1992) expressed his displeasure in a book that in its entirety was a critical appraisal of Strauss & Corbin (1990). The main conflict was about the issue of emergence vs. forcing in the coding process. We will go into details of this issue in the section “The influence and use of pre-understandings in the GT process” below. There exist many papers, outside IS, discussing this divide; e.g. Melia (1996), Kendall (1999), Heath & Cowley (2004), Kelle (2005), and Walker & Myrick (2006).

The IS scholars Urquhart (2001) and Seidel & Urquhart (2013) claim that this debate has largely been absent in the IS discipline. This absence can be seen as an indicator of a low methodological maturity concerning GT in IS. There exist, however, now several publications with reflections and treatment of this controversy; e.g. Gasson (2004), Lamp & Milton (2007), Matavire & Brown (2013), and Stol et al. (2016). IS scholars have taken different positions in this conflict. Urquhart (2001), Fernandez (2004), Fernandez & Lehmann (2005), Adolph et al. (2011) and Walsh (2015) express preferences for a Glaserian approach. Urquhart (2001) describes her experiences from struggling with axial coding of Strauss (1987) and Strauss & Corbin (1990) and describes her relief when turning to Glaser (1978). The Straussian approach is considered as “rather formulaic and overburdened with many rules” (Urquhart, 2001, p 128). Seidel & Urquhart (2013, p 238) talk about “the rigidity of procedures of Straussian GTM”. As a contrast to these enounced views, one can state the fact (mentioned above) that more IS scholars tend to use Straussian GT than Glaserian GT (Matavire & Brown, 2013; Wiesche et al. 2017).

Urquhart (2001) argues for a conscious choice of what GT variant to use and that this should be based on a clear understanding of the GT body of knowledge. As found in the investigation of GT use in IS by Matavire & Brown (2013), mentioned above, many GT applications are conducted and reported without reference to a specific GT variant. This is also found in an investigation by Stol et al (2016). Seidel & Urquhart (2013, p 243) argue also for a conscious choice: “researchers should make explicit what school of grounded theory they apply”. They continue stating that “researchers ... should consistently adhere to that school’s procedures in order to preserve the integrity of grounded theory and avoid inconsistencies and contradictions” (ibid). This is a position to not mix elements from different method variants, i.e. to stay

method compliant. One could say: Chose one method variant and stick to that method! Another position is, however, taken by Birks et al. (2013, p 4), who strive for a description of GT that is bringing forth “the essence of GTM research across the spectrum of traditions and overshadow the differences”. This position is based on the following view: “We find that excessive focus on the differences between the traditions is not helpful to GTM researchers” (ibid).

The kind of “method compliance” attitude, mentioned above, seems, to be governing other observations and reasoning made by Birks et al. (2013, p 2) about mislabeling of GT studies: “The ... perhaps ... most problematic, form of mislabelling occurs when researchers claim to have used GTM when they have only done so partially.” A partial use of GT seems, however, to be fairly common. This is one of the main conclusions made by Stol et al. (2016) based on their investigation of GT studies. Birks et al. (2013, p 2) describe problems with partial use in the following way: “The most common example of this is GTM techniques used to code data without due regard to fundamental methodological concepts, such as theoretical sampling, constant comparison or theoretical saturation. In these cases, the researcher can only legitimately claim to have used certain procedures developed within GTM, but not the method, which implies more than just coding techniques.” Seidel & Urquhart (2013, p 243) report also about selective use of GT procedures “as opposed to leveraging the entire framework”. One example is that scholars only use coding techniques without any building of theory. This has also been identified by Stol et al. (2016) and Wiesche et al. (2017) in their investigations on GT applications.

From the above-mentioned papers there exist thus claims to:

- Make a conscious choice of one GT variant
- Apply the chosen GT variant in its entirety, in order to reach the full potential of grounded theory development

This means to avoid their contraries:

- Do not mix elements from different GT variants
- Do not use only a selective portion of GT elements

This “dogmatic” attitude aiming for strict method compliance seems a bit surprising within the IS discipline. In IS development, there exist numerous methods. Many of them are mixes of procedural and notational elements taken from other methods. It is also a well-known fact that IS development methods are situationally adapted with a selective and flexible use of method components (Henderson-Sellers et al. 2014). Why could not IS scholars apply a flexible use of research method variants, which could mean a selective use of procedures or an integration of elements from such different method variants? This is a kind of rhetorical question based on the introduced analogy of IS development methods. We think that it is possible and sometimes suitable to make adaptations and integrations of different GT elements. This does not mean that we argue for a sloppy use of GT elements and an unreflective combination of different elements from diverse GT variants. We believe in a knowledgeable use of GT, where scholars are skilled in different GT procedures and well versed in different variants of GT. However, to use a selective part of coding procedures without creating a complete grounded theory should not be seen as a failure or a mislabeling if this follows expressed research purposes. This is in line with the reasoning made by Wiesche et al. (2017, p 696): “Contingent on the goal and context, either a full GTM protocol or a partial portfolio approach may be appropriate”. However, we fully agree with Seidel & Urquhart (2013), Stol et al. (2016) and Birks et al. (2013) that it is important to be explicit about what kind of GT variants and procedures that have been applied in a reported research study together with well-thought motivations.

One can wonder about this “dogmatic fear” among IS scholars; i.e. the claim to adhere closely to one established GT variant. Perhaps, there is an influence from Glaser’s (1992) very strong attack on Straussian GT and his claim for methodological purity and orthodoxy. However, even Glaser (2010, p 1) himself acknowledges a partial and combinatory use of GT: “Grounded theory is used in part or in whole by researchers. When used in part, it is ‘adopt and adapt’, with other research methods woven in, based on the training and judgment of the researcher involved”.

Wiesche et al. (2017, p 687) state that “it is generally accepted that the application of GTM requires tailoring GTM procedures to the research context”. Confer also Lings & Lundell (2005) about situational adaptation. Wiesche et al. (2017) have identified that there exist disagreements among scholars concerning the degree of tailoring. They describe also GT as “a portfolio of procedures”. A natural consequence of this is to apply

a situational choice and adaptation of different procedures to the actual research context in a conscious manner. One aspect of this is an awareness of when it is not appropriate to adopt some kind of GT approach.

It is not only a matter of which GT variants and procedures to apply. It is often also an important issue of how to combine GT with other research approaches. GT has an emphasis on data analysis and theory development. There exist other qualitative research approaches that can be applied in combination with GT, for example, case study research and action research. Fernandez et al. (2002) have identified obstacles to combine GT with case study research when such research is claimed to be theory-driven. However, Fernandez & Lehmann (2011) have later contributed by elaborating on a proposed integration of GT and case study research. Outside IS, in management research, the integration of GT within case study research seems to be well established (Eisenhardt, 1989). Baskerville & Pries-Heje (1999) have developed a research approach integrating elements from GT with action research. They have identified certain incompatibilities that make a full integration impossible. One such aspect is: “theoretical sampling, serve only limited purposes where an interventionist strategy presents a possibly unpredictable range of events that must be considered as a population.” (ibid p 7). When inspecting the investigation on GT applications in IS (Wiesche et al. 2017) it is interesting to note that more than half of the articles (56%) imply some combination with other research approaches. How to combine GT with other research approaches seems to be an under-developed research area in IS. It should be a desirous topic for future research in IS.

GT and research paradigms

There exist different views on how the GT approach is positioned in relation to different research paradigms. One view is that GT is paradigmatically neutral following claims made by Glaser (2001). This means that GT is seen as “independent of the underlying epistemology” (Urquhart et al. 2010, p 361) and that it “can be used in positivist studies, interpretive or critical studies” (ibid). Confer also Gasson (2004) and Urquhart (2001) for such a discussion. Stol et al. (2016) have taken another position. They have investigated different GT variants (Glaserian GT, Straussian GT, constructivist GT) and tried to characterize each of them according to different paradigmatic assumptions. They characterize Glaserian GT as based on an objectivistic view, which means that “there exists a single, correct description of reality; the researcher, therefore, discovers grounded theory from data” (ibid p. 4). Straussian GT is associated with pragmatism and symbolic interactionism. This is based on a view that “reality is constructed through interaction and relies on language and communication” (ibid). Constructivist GT is associated with social constructionism, which is based on the view that “social reality is constructed by our individual and collective action” (ibid). As can be seen from these characterizations, there is a clear resemblance between Straussian GT and constructivist GT. There are also some scholars who have combined GT with a research orientation based on critical realism (Strong & Volkoff, 2011; Walsh, 2015).

The discussion within IS about the paradigmatic foundations of GT seems to be related to the interpretive vs. qualitative discussion (Klein & Myers, 1999; Myers, 1997/2018). According to these authors, it is important to not automatically equate a qualitative research approach with an interpretive approach. Qualitative research can be either positivist, interpretive or critical (ibid). It is easy to see that the voices from these authors are echoed in the writing of Urquhart (2001). This view is also emphasized by the neutrality statements by Glaser (2001). As a qualitative approach GT can be used following different research paradigms. However, when looking at the characterizations made by Stol et al. (2016), mentioned above, another possible interpretation come through. According to these characterizations, one GT variant is objectivistic (Glaserian) and thus easier to associate with positivism. The other two (Straussian and constructivist GT) are associated with constructionist views and thus easier to relate to an interpretive research paradigm.

The split into different GT variants has influenced this discussion on paradigmatic foundations. As said in section “GT variants” above, GT should rather be seen as a family of resembling, but different, methodological variants, than one singular and conjunct method as the situation was in its inception during the 60’ies. It is natural that different variants are associated with different research paradigms, albeit the different variants’ united orientation towards qualitative inquiry. Based on this qualitative orientation it is understandable that many scholars claim that grounded theory (as a general approach) is appropriate to use within interpretive research. Such claims can be found in Hughes & Jones (2003), Gasson (2004) and Abdel-Fattah (2015). One fundamental question is if there is anything in GT generally (i.e. across different variants) that hinders the application of different paradigmatic stances. We would say that the inductive

approach of coding data is not possible to unite with a classical hypothetico-deductive approach, which is mainly associated with positivism. Gasson (2004, p 85) has identified such criticism against GT: “One of the major criticisms of grounded theory is that it is not ‘scientific’ (deductive) in its analysis of the data, but based on inductive conclusions from a superficial analysis of collected data”.

We could here insert a contrary view, which is the claim made by Bryant (2002) that there seem to be some inherent positivistic features in GT. In a very critical paper on GT, Bryant (2002, p 31) has made the following characterization of this approach: “Taken together this demonstrates a consistently positivist strand running through the GTM literature from the 1960s to the present”. However, Bryant seems later to have taken a position that embraces other paradigmatic qualities of GT. In Bryant (2009; 2017), he investigates and acknowledges the roots of original and Straussian GT in pragmatist philosophy. Confer also Bryant & Charmaz (2007) for such a discussion. These roots have also been acknowledged by Lanamäki & Haj-Bolouri (2019), where they argue for a pluralist-pragmatist conception of GT. This is done as a commentary and critique of the GT review paper of Wiesche et al. (2017) with their presumed single paradigm view rooted in positivism.

One important aspect of the discussion on paradigmatic foundations is the notion of discovery. The title of their original book is “The discovery of grounded theory” (Glaser & Strauss, 1967), and this very notion of *discovery* has accompanied the method through its history. Bryant (2002) is very harsh in his critique of the use of “discovery” in the grounded theory approach: “Furthermore the entire assumptions about representation and discovery are at best questionable, and at worst unfounded and naïve” (ibid p 34). Confer also Stol et al. (2016) for objections against the discovery notion. We agree that the use of “discovery” is unfortunate, since it may direct to scholars to believe that there is a theory (already there) to be discovered. There are some programmatic statements in the introduction of Glaser & Strauss (1967) that are unfortunate and confusing: “We believe that the discovery of theory from data – which we call grounded theory – is a major task confronting sociology today” (ibid p 1). To avoid confusion and misdirecting assumptions, there is a need for a re-interpretation of “discovery” in the GT approach. Discover is about novelty, but one needs to distinguish between 1) the perception of something new and 2) the generation of something new. GT as a method for qualitative inquiry is associated with both. In a qualitative inquiry, following the tenets of GT, scholars want to *see new things* in the studied empirical field. Without any preconceived hypotheses about reality, an inquirer has a greater possibility to discover what is not seen earlier. Actually, Glaser (1978, p 159) states this in a clear way: “More and more people wish to discover what is going on, rather than assuming what should be going on, as required in preconceived type research”. The creation of a *new understanding* based on such new empirical findings is done through conceptualization (interpretations and abstractions). The creation of a grounded theory is thus done through two related kinds of novelty: 1) the perception of new things and 2) the generation of new abstractions. The notion of discovery is more easily associated with perception of (what has not be seen earlier in) the world, than with human creation of something new. We think that this clarification of *the two types of novelty* is a better way to characterize GT than the, sometimes confusing, notion of discovery.

A discussion on GT and research paradigms can be pursued much further, but we will conclude it here temporarily; a continuation will be brought up in our “Concluding discussion” section below. We conclude the discussion here by stating and commenting on two fundamental and related questions that need to be raised: 1) Is there an inherent philosophy of science in the general approach of GT or in the emerged different GT variants? 2) Can GT (in general) or different GT procedures be used in a harmonious and supportive way to an application of diverse research paradigms? If the first question would be answered with e.g. “positivism” or “interpretivism” (as has been made some scholars; see above), then this could obstruct respectively facilitate an application of a chosen research paradigm. Our own reflections on these matters read as follows: The general ideas of GT (as e.g. open-minded inductivism) are much more associated with qualitative and interpretive research than with positivism. This makes it hard to combine with a strict positivistic approach. However, if we look at each of the different GT coding procedures (as ways of analyzing data), it seems that most of them could be used in flexible ways and as such, they can be applied in accordance with the underlying ontological and epistemological stances of the inquirer. In that sense, we can, at least partially agree with Glaser’s neutrality position. It is what you as scholar *do* when you apply the different coding procedures as tools that counts.

GT and guidance

Urquhart has in several articles stressed the need for better guidance when doing grounded theory studies (e.g. Urquhart, 2001; Urquhart et al. 2010; Seidel & Urquhart, 2013). Based on literature reviews, the articles conclude that there is a shortage of practical guidance concerning the “how-to” of grounded theory methods. Urquhart (2001) suggests seven rules of thumb when using grounded theory. The primary purpose of these rules of thumb is to help novice IS researchers; see Urquhart (2001) for a detailed description.

Urquhart et al. (2010) emphasize the need for guidance for conducting and evaluating grounded theory studies in IS. A key question in the article reads “How can the grounded theory method be leveraged to build theory in information systems?”. In order to answer the question, the article proposes guidelines that are based on a framework that focuses on conceptualization and theory scope. They have formulated five guidelines; and the headlines are: constant comparison, iterative conceptualization, theoretical sampling, scaling up, and theoretical integration. The first three guidelines relate to the GT process and their purpose is to address how researchers can achieve the degree of *conceptualization* necessary to build a good theory through analytic mechanisms, such as constant comparison. The purpose of the latter two guidelines is to assist researchers with theory scope by giving guidance on the level of theory and how it might be integrated with the extant literature.

Seidel & Urquhart (2013, p.241) have built further on the work conducted by Urquhart (2001) and Urquhart et al. (2010) and they state that there is “... a very real need to unpack how precisely GTM has been applied in the IS field to date, precisely because the Straussian strand has been subject to change and at the same time extensively applied in our discipline. Moreover, the authors discuss the concepts of “emergence and forcing”. This dichotomization is often used to strongly recommend researchers not to force preconceived conceptualizations on data. In their analysis, they have found that researchers used a variety of coding procedures. One point of departure in their article is that “... there are now different strands of GTM, which differ in various aspects, including induction, deduction, and verification” (p.238). Consequently, one purpose of their study is to suggest three propositions and five guidelines. The propositions are more generally formulated and include recommendations: 1) to use the coding paradigm in order to enhance theoretical sensitivity towards causal relationships and explainable theory, 2) to make conscious about how the coding paradigm should be used, and 3) adhere to the basic principles of the method, such as theoretical sensitivity and constant comparison. The suggested guidelines are oriented towards the phase of axial coding and read: flexible use of axial coding, a rationale for adaptations, awareness of ‘forcing’ issues, theoretical sensitivity towards causality, and contextualization; see Seidel & Urquhart (2013 pp.249-252) for a full description of the propositions and guidelines.

Wiesche et al. (2017) acknowledge the work by Urquhart & Seidel and state that one reason for suggesting guidelines is that there is ambiguity concerning how GT should be applied in IS research. Wiesche et al. (2017) add that the purposes of guidelines, advice, and perspectives regarding the use of GT are to ensure the rigor of the research contribution.

From the above-mentioned studies, we can conclude that several scholars have found it necessary to develop complementing guidance. This fact reveals a need for enhanced prescriptive support. GT has been imported to IS from sociology. This is something that cannot be done in an unreflective way since IS has its own research culture. Consequently, we see further needs to address enhanced guidance of GT within IS.

Usefulness of GT in IS studies

The usefulness of GT is discussed in several articles. We pick some examples of discussions on GT usefulness in IS. Based on a study that examined the circumstances and settings in which ICT is implemented by Australian organizations, Fernandez et al. (2007) conclude that GT is useful in several respects: 1) Going beyond description is one of the most important and powerful aspects of grounded theory, and interviews are extremely valuable in allowing researchers to detect patterns and move beyond the limited goal of simple description. 2) By adopting a grounded theory approach, it is possible to produce meaningful results in a short period of time and also to provide the foundations for a second study to extend the theory.

Moreover, Rowlands (2005, p.87) state that grounded theory techniques “... is well suited to capturing the interpretive experiences of owner/managers and developing theoretical propositions from them”. Rowlands also conclude that the grounded theory techniques “... of open and axial coding are well suited to the supporting Klein & Myers’ [1999] fundamental first principle for conducting interpretive field research, that of the hermeneutic circle.”. Finally, Hughes & Jones (2003, p.4) posit that “... the use of Grounded Theory in the case studies indicated that it can assist conceptually in the understanding of a problem situation, can discover local empirical theory and can also assist with the articulation of lessons learned”. From the above-mentioned studies, we can conclude that several scholars have found GT useful regarding coding, constant comparison and theory generation.

The influence and use of pre-understandings in the GT process

One of the crucial issues in GT is how an inquirer’s pre-understanding influences data collection, data analysis and theory generation. As stated above, there is a strong emphasis in GT on inductive analysis of data without the use of preconceived hypotheses and categories. However, already on page 3 in Glaser & Strauss (1967), there is an important footnote that brings nuances to this view: “the researcher does not approach reality as a *tabula rasa*. He must have a perspective that will help him see relevant data and abstract significant categories from his scrutiny of the data”. It is worth noting that such a perspective guides the researcher both in observation (“approach reality”, “see relevant data”) and in conceptualization (“abstract ... categories”).

Issues of pre-understanding and the use of prior theory have been frequently discussed within the IS/GT literature. Urquhart (2001, p 130) is following Glaser’s position to postpone literature studies until a theory has been formulated: “literature is used to help build the theory ... but only once the substantive theory has been developed”. Confer also Urquhart & Fernandez (2013, p 230) who state that it is “the generated grounded theory [that] will determine the relevance of the literature, never the converse”. Other scholars take a more nuanced position, e.g. Rodon & Pastor (2007) who state “although we conducted a literature review prior to starting the GT study, we did not formulate any hypothesis or theoretical models”. This means that it should be possible to become more acquainted with the appropriate literature, without letting it conceptually “contaminate” (to use a term from Glaser, 1992) the data collection and the data analysis. Concepts and conceptual structures (in the pre-understanding) can be “bracketed” during initial collection and coding of data. What is crucial is thus how the pre-understanding is used in data collection and data analysis. There are scholars who claim the importance of having a good understanding of the kind of empirical setting and its constituent phenomena that are studied (e.g. Hughes & Jones, 2003; Lings & Lundell, 2005; Matavire & Brown, 2013). To establish such an understanding it is often necessary to study pertinent literature. In this context, it is interesting to read the arguments by Reimers & Johnston (2008) of not using GT in a study on inter-organizational IS: “We also ruled out Grounded Theory ...which might seem to offer a feasible alternative approach. The reason for this decision was that our research object, inter-organizational information systems, is highly abstract”. I think that this kind of argument is feasible for many studies in IS. Scholars in IS often study technological, organizational and informational phenomena of very complex and intricate character. There exist already linguistic labels and conceptualizations “out there” in practice, and the inquirer needs to have sufficient pre-understanding (through such conceptualizations) when entering the empirical field in order to navigate in it and to pose relevant and intelligible questions to members of that field and exercise other kinds of meaningful communication.

This relates also to the use of “seed categories” in the data analysis. These are preformed codes often stated in a so called “start list of codes” (Miles & Huberman, 1994). This use of preconceived codes is considered as a deviation from true GT (Stol et al. 2016), although there exist examples of scholars who claim a GT use combined with such seed categories (Hughes & Jones, 2003). Seaman (1999) describes that such an initial list of codes might come from the study objectives and the research questions; confer Suddaby (2006) and Matavire & Brown (2013) concerning discussions about the role of research questions in GT studies. Even if we agree with a skeptic attitude towards such an initial list of code, it is hard to disregard that categories occurring in research objectives might influence the coding process.

We think it is vital to distinguish between different kinds of prior knowledge (pre-understandings) in relation to the conduct of a GT study (and other kinds of research as well). We articulate and distinguish between three kinds of pre-understanding (knowledge types) and we will discuss them below:

1. General common-sense knowledge about the field of study
2. A general perspective (conceptualizations) that is relevant to the field of study
3. An elaborated theory (with direct relevance for the field of study) with corroborated or hypothesized categories and causal relationships between them

General knowledge about phenomena in the field of study is often necessary as stated above (knowledge type 1). Reading academic, as well as, other literature may help the inquirer to be sufficiently knowledgeable before fieldwork. This should imply that the researcher is better prepared for inquiry in the empirical field. Our interpretation is that it is mainly elaborated theory (knowledge type 3) that is intended when warnings are issued to avoid studying literature before fieldwork and data analysis. Such theories consist often of well-defined concepts and specified causal relationships. As we understand the writings of the GT originators Glaser and Strauss, they claim that such conceptual pre-understandings may block the inquirer to discover new empirical phenomena and generate new and appropriate categories. Consequently, there is a great risk of having the empirical reality filtered through these established theories and categories. Nothing new is seen by the researcher, only instances of already known categories and causal relationships.

The knowledge type 2, (i.e. a general perspective) does not contain specified categories and relationships for the substantive area. As stated above in the introduction of this section, Glaser & Strauss (1967) stated that the researcher “must have a perspective that will help him see relevant data and abstract significant categories”. The notion of a sensitizing concept, from Blumer (1954), has been picked up in the GT literature (Bowen, 2006; Charmaz, 2014). The following description is given by Blumer (1954, p 7): A sensitizing concept “gives the user a general sense of reference and guidance in approaching empirical instances. Whereas definitive concepts provide prescriptions of what to see, sensitizing concepts merely suggest directions along which to look”. A perspective can be said to consist of such sensitizing concepts with a broad and general application area. Such a perspective and its concepts can, as a reflective pre-understanding, be used to inform and guide the inquirer in data collection and analysis. We will comment further on this issue below.

The coding procedure of axial coding and its use of an action-oriented coding paradigm seem to be the main reason for the schism between Glaser and Strauss. This coding approach was described in Strauss (1987) and later in Strauss & Corbin (1990; 1998). The action coding paradigm consists of generic concepts such as conditions, action/interaction strategies, context, and consequences. Glaser (1992) thought this was a way to use preconceptions when analyzing data, i.e. rather forcing than let categories emerge. The action coding paradigm was based on one of the coding families from Glaser (1978). In total Glaser presented 18 families (ibid), and he criticized Straussian GT to just use one of them (Glaser (1992). However, it is interesting to read what Glaser himself says about this coding family that corresponds to the Straussian action paradigm model: “The six C’s: Causes, contexts, contingencies, consequences, covariances, conditions. This is *the ‘bread and butter’ theoretical code of sociology*. It is *the first general code to keep in mind* when coding data. *Most studies fit* into either a causal model, a consequence model or a condition model.” (Glaser 1978, p 74; our emphasis). With this background, it is hard to understand his harsh critique. If it is *the first theoretical code to apply*, then why should it be particularly problematic to apply it the way Strauss suggests? It should also be noted that several (at least five) of the other 18 code families of Glaser (1978) are related to the cause/condition-consequence family. A similar conclusion is made by Kelle (2005): “if one looks more thoroughly at the conceptual design of Strauss’ and Corbin’s coding paradigm Glaser’s critique seems to be overdrawn: the general theory of action underlying the coding paradigm carries a broad and general understanding of action which is compatible with a wide variety of sociological theories”. This kind of action conceptualization should be seen as a general perspective (knowledge type 2) rather than an elaborated theory (knowledge type 3). This character should influence its applicability positively in GT processes of collection and analysis of data. Our view of the generic concepts that are included in the action coding paradigm is that they together constitute a perspective of meta-categories with a capacity to support focusing and structuring of categories.

There are several IS scholars who have been engaged in the discourse on axial coding and its action coding family (e.g Birks et al., 2013; Matavire & Brown, 2013; Wiesche et al., 2017). As described above (section “GT variants”), Urquhart (2001) took a position against the action coding paradigm of Strauss & Corbin (1990). A quite contrary position was taken by Hughes & Jones (2003) who claim the importance of axial coding and its action focus: “An important aspect arising from the use of Grounded Theory in the case study is *agency*. Paramount attention must be given to the means by which actors or organisational members

create and recreate organisational structures” (ibid, p 5). They emphasize the role of axial coding for such an agency focus: “the [GT] procedures particularly the development of categories through axial coding (relating categories) facilitates the process of this interaction in a natural way” (ibid). Cronholm (2002) concludes, in a study of PhD students’ use of GT in IS, that the action coding paradigm was experienced as a strength since many of them are familiar with action-oriented theories. Seidel & Urquhart (2013) have made a very important contribution to this debated issue. They have made an in-depth investigation of IS articles that have applied Straussian GT with a special focus on the application of the coding paradigm and its effects. We summarize some of their important findings: 1) The use of axial coding is well established, but the action paradigm model has gained little popularity, 2) when used, the action model, seems to be an appropriate tool (“researchers have only proceeded with strict application of the paradigm where it has seen to be a good fit” (ibid p 248), 3) the use of the coding paradigm have led to the development of theories with a causal focus, which is considered as “one clear advantage” (ibid). A general conclusion from their study is: “Despite all the criticism that has been put forward against axial coding and the paradigm, it must be noted that there is some agreement in the literature about its advantages. Most notably, the paradigm seems to be more easy to handle than Glaser’s coding families” (ibid p 251). This statement (based on an inquiry on several IS papers) is obviously another position than the one presented in Urquhart (2001) that was based on her personal experiences from axial coding.

The issue of more or less use of different kinds of pre-understandings relates directly to the discussion on induction vs. abduction in GT. The strong argumentation for inductive analysis in Glaser & Strauss (1967) and Glaser (1978; 1992) has been challenged by several scholars in the general discourse on GT use. Several scholars ask for a more nuanced view on induction and express a preference for abduction as the main strategy for data analysis and theory generation in GT (e.g. Kelle, 2005; 2007; Reichert, 2007; Thornberg, 2012). Abduction is described by Thornberg (2012, p 247) in the following way: “a researcher who uses abductive reasoning constantly moves back and forward between data and pre-existing knowledge or theories, and makes comparisons and interpretations in the searching for patterns and best possible explanations”. This means an active and continual use of theoretical pre-understandings during the whole qualitative research process. There are other scholars who claim that an elaborate abductive approach to knowledge building will transform the GT method in a profound way by not making it inductively driven (Timmermans & Tavory, 2012; Richards & Farrokhnia, 2016). In IS research, there exist also explicit discussions about giving abduction a primary place in GT-based theory development. In a review of GT papers on electronic mediation, Vaast & Walsham (2013) use an induction/abduction continuum to position the reviewed papers. Lanamäki & Haj-Bolouri (2019) advocate for an explicit adoption of an abductive approach when applying GT in IS research.

The character of a grounded theory or other GT research outcomes

The purpose of the GT approach is to generate a theory that is grounded in data (e.g. Strauss and Corbin, 1998). One cornerstone in generating grounded theory is letting the data speak (e.g. Glaser 2012). Consequently, theory generation relies heavily on inductive coding. Goldkuhl & Cronholm (2010) state that the inductive character of the theory generation process is essential especially in early stages of the GT process since it should be applied with an open mind and as free as possible from preconceptions.

Wiesche et al. (2017) have conducted an investigation concerning how GT is applied in IS research and the character of the research contributions. They have analyzed 43 GT articles in major IS and related journals. Their conclusion is that 10 of the articles develop theory (i.e. 23%). The other 33 articles (77 %) contribute with models and/or rich descriptions of various phenomena. One conclusion from their study is thus that most of the GT articles do not fulfill the purpose of theory generation. However, they also conclude that the IS community benefits from each of the forms of contribution.

Vaast & Walsham (2013) explain the low rate of fulfilling the goal of presenting grounded theory by the fact that researchers have different ambitions in using GT. They have studied the use of GT in electronically mediated social contexts and discovered a wide range of theoretical ambitions. Their findings ranged from mostly descriptive studies to the development of novel conceptualizations. Seidel & Urquhart (2013, p.243) add that researchers apply grounded theory as a coding technique, as opposed to building theory. Confer our discussion in section “GT variants” above.

Strauss & Corbin (1998, p.22) define a theory as “a set of well-developed categories (e.g. themes, concepts) that are systematically interrelated through statements of relationship to form a theoretical framework that

explains some relevant social ... phenomenon”. Moreover, Glaser & Strauss (1967, p. 22), argue that “the form in which a theory is presented does not make it a theory; it is a theory because it explains or predicts something”. Both definitions have in common that they emphasize the importance of that theories should explain something and go beyond descriptions of empirical observations. We are not saying that research contributions that do not present grounded theories have not properly followed the GT. However, we agree with Vaast & Walsham (2013, p.9), who state that GT researchers should clearly articulate “... their theoretical ambitions along the induction/abduction continuum”. This is essential for the readers’ understanding and expectations.

In order to support theorizing, Urquhart et al. (2010) present a framework that consists of two axes, which are: the degree of conceptualization and the theory scope. Conceptualization moves beyond description and it includes also relationships beyond categories. The theory scope relates the outcome of building a theory. Urquhart et al. (2010, pp.365-366) stress that “As the main purpose of using grounded theory is theory building, researchers should aim to develop theories of greater scope. The more the data analysis moves from description to theory, and the more the scope of the theory increases with the development of formal concepts, the better. A guideline provided by Seidel & Urquhart (2010) is that the researcher should focus on causal relationships leading to explanative theory. Moreover, they conclude that the coding paradigm “... appears to be suitable to study cause-effect relationships, for instance, in the context of IT appropriation, use, and effects” (p.250).

From the above-mentioned studies there exist strong encouragement to use GT in order to generate theory. However, if the researcher has more modest ambitions such as creating models or descriptions of a particular phenomenon the researchers should clearly inform the reader about his/her purpose. The use of GT to create something else than theory is seen as a deviation to the intention of GT. As discussed above, a more nuanced view seems to have evolved where other kinds of results (such as models and rich descriptions) are considered as meaningful and valuable outcomes from GT research.

Concluding discussion

Conclusions from review of GT discourse

Several conclusions can be drawn from the review of the themes in the IS/GT discourse. We formulate the following important conclusions here based on the review above:

- GT is far from being one singular research method. It is rather a family of methods. Development efforts can be addressed on one such single GT variant or combinations (theme 1).
- The use of GT procedures should be made consciously and this use can imply a selective, flexible and tailoring application of such different GT procedures (theme 1).
- There are some inherent properties of GT (such as inductive analysis), which aggravates a combination with a positivist research approach. GT is rather suited for qualitative and interpretive research (theme 2).
- The research paradigm discussion concerning GT in IS should move beyond the old positivism vs. interpretivism debate (theme 2).
- There seems to be needs and demands for more guidelines concerning GT use in IS research. Several specific guidelines have also been formulated by IS scholars (theme 3).
- In order to stimulate an enhanced use of GT in IS, it is important to demonstrate the value of such uses in distinct IS Studies (theme 4)
- Different kinds of pre-understandings may influence data collection and data analysis. It is vital to have a conscious use of these diverse pre-understandings during the GT research process (theme 5).
- An action coding paradigm can be used in a sensible way without forcing data into categories. It can contribute to the formulation of causality oriented theories (theme 5).
- There is a great potential in the grounded theory approach for the generation of theory as a research outcome. However, research studies with lesser ambitions might also give valuable results and should not be ruled out (theme 6).

Possible development of GT in IS

In our discussion below, we want to draw several of these different conclusions together. We have identified two related issues for further improvement of GT in IS research that we will elaborate below:

- 1) An enhanced action perspective as a support for coding of data.
- 2) A clarification of a balanced interaction between inductive data analysis and use of extant theories in theory formation.

There exists a clear link from axial coding and the action coding paradigm to paradigmatic foundations of GT. However, this does not seem to have been particularly recognized in the IS discussion on GT methodological issues. As said above (section “GT and research paradigms”), much of the paradigm discussion in IS seems to have been centered on positivism, interpretivism, and critical research. The influential article by Orlikowski & Baroudi (1991) seems to have restricted the discussion and awareness among IS scholars for a long time to these research paradigms. It is not until later that one can see a growing awareness of and interest for pragmatism as a suitable paradigm for IS research (e.g. Goles & Hirschheim, 2000; Marshall et al. 2005; Goldkuhl, 2012). Such a paradigmatic recognition of pragmatism seems to be a missing piece of puzzle for the understanding and application of an action-oriented axial coding in GT research.

The action-oriented thinking in axial coding (Strauss, 1987; Strauss & Corbin, 1990) had a clear background in pragmatist philosophy and symbolic interactionism. This has been described in several publications; by Strauss himself (ibid; Strauss, 1993) and by others (e.g. Lomborg & Kirkevold, 2003; Strübing, 2007; Bryant, 2009; 2017; Chamberlain-Salaun et al. 2013; Charmaz, 2014; 2015). This influence is, however, clear already in Glaser & Strauss (1967). For example, in chapter X, they describe the view of a (grounded) theory as highly influenced by pragmatist philosophers such as John Dewey.

If an IS scholar acknowledges and embraces such a paradigmatic position, it is natural and appropriate to adopt action-oriented thinking and concepts during data analysis. We would actually claim, from many years of close readings of GT publications and also informed by our own GT research, that this is *true GT*. A further enhancement of this pragmatic thinking seems to be one important way forward. As stated in the review conclusions above, further development can, appropriately, be made with a direct focus on some specific GT procedure. This is also in line with a selective use of coding procedures. An improved way to conceptualize action patterns from qualitative data seems to be important in IS. A study of human actors (as individuals or in collectives) and digital artifacts in complex socio-technical contexts should require an enhanced action model that goes beyond the action conceptualization of the coding paradigm in Strauss & Corbin (1998) or any of Glaser’s (1978) coding families.

One possible example is Situational analysis (Clarke et al., 2018). This is a kind of extended GT method that involves a conceptualization that goes beyond the originator’s action models. This model proposes the identification of individual and collective human actors, technological (non-human) actants and different kinds of objects related to action in the data material. We refer to this approach to give an indication of the direction of a possible future method development, not to be taken as a suggestion for a specific approach to use. As stated above, an enhanced action conceptualization needs to be adequately adapted to the research context of information systems. It is important to acknowledge the balancing of a pre-understanding that is helpful in coding vs. one that is forceful. A too detailed action conceptualization can move it from a sensitizing perspective (knowledge type 2) to an outline of elaborated theory (knowledge type 3), which can make it a forcing device rather than illuminating for conceptual emergence.

One general perspective (knowledge type 2) that has emerged within IS and should be useful for an action-oriented coding of data is socio-instrumental pragmatism (SIP); e.g. Goldkuhl (2005; 2019). SIP contains a general ontology model that categorizes typical phenomena in an IS context such as: humans, human actions, personal knowledge, intersubjective/institutional knowledge, institutional actors (such as organizations), digital artifacts, material artifacts, oral communication objects, written/recorded communication objects and monetary artifacts. The SIP ontology acknowledges different types of human actions (perceptual, reflective, intervention acts) and also pre-determined acts by digital and material artifacts. The fundamental action model of GT in Strauss & Corbin (1998), consisting of conditions, actions and consequences, can be nuanced and conceptually populated by concepts from socio-instrumental pragmatism. A GT action analysis following SIP should encompass both external and internal aspects of

human actions. An analyst should identify both external and internal action conditions. Internal conditions are action dispositions of humans such as competences, interpretations, values, intentions. External conditions are triggers, affordances and impediments of material and/or symbolic character. The human action can be divided into covert parts (perceptions, reflections) and overt parts as visible to others. The results of actions can also be studied concerning internal vs. external results and consequences. The external results are those factual interventions and changes in the outer world. Internal effects are the human experiences and learnings that arise through the actor's interventions and possible effects from these.

The fear to have a grounded theory “contaminated” by constructs from extant theory (Glaser, 1992) might have made IS scholars too cautious when it comes to study and incorporate such constructs during grounded theory generation. More clear guidance might be needed on how to work in a constructive manner with inductive data analysis and the use of extant theories in the process of grounded theory generation (Goldkuhl & Cronholm, 2010; Thornberg, 2012). The vital attitude of a GT user to be open-minded should not restrict a sensible use of extant theory. The inquirer should be open in searching, assessing and possibly borrowing and transforming theoretical constructs from other theory sources. This implies the articulation of a qualitative research process that is characterized by abduction rather than strict induction.

The GT dictum of being open-minded and discovery oriented in data collection and data analysis should be sustained. This should also include a search for a great variety of data and a use of different empirical methods with capacities to reach such diverse data (Bryman, 2015; Goldkuhl, 2019). Pre-conceptions of any kind can disturb what data are generated and how these data are coded. Initial data collection and data analysis should be done with a minimum of preconceptions. However, as the data analysis proceeds and conceptualizations emerge, the inquirer can look into existing theories that may inform further work in a fruitful way. A pragmatist position is to see theories as instruments for further inquiry of an empirical field (James, 1907; Cronen, 2001). If we use theories and pre-formed categories in a sensitive way it could support both data collection and further conceptual analysis of data. Theoretical sampling of GT is actually a way to let knowledge guide further data collection and analysis. It should be possible to strengthen the abductive character of theoretical sampling through the use of extant theories. It should be generative to the knowledge process to feed extant theories (well selected on the basis of empirically-grounded and emergent conceptualizations) into the iterative and alternating processes of data collection and data analysis.

The inquiry of this paper has been driven by issues and concerns in the IS discipline: How do we apply a general method for qualitative social research within IS? What problems and possibilities do we encounter with GT? The literature review and the articulation of possible developments are framed by the characteristics of the IS discipline. However, we think that this contribution can have a value for other disciplines as well. It can be seen as a continuation of the previous works (Goldkuhl & Cronholm, 2010; 2018) that we have presented in the qualitative research community.

References

- Abdel-Fattah, M. 2015. “Grounded theory and action research as pillars for interpretive information systems research: A comparative study,” *Egyptian Informatics Journal*, (16), pp. 309–327.
- Adolph, S., Hall, W., and Kruchten, P. 2011. “Using grounded theory to study the experience of software development,” *Empirical Software Engineering*, (16:4), pp. 487–513.
- Baskerville, R., and Pries-Heje, J. 1999. “Grounded action research: a method for understanding IT in practice,” *Accounting, Management & Information Technology*, (9), pp. 1–23.
- Birks, D., Fernandez, W., Levina, N., and Nasirin, S. 2013. “Grounded theory method in information systems research: its nature, diversity and opportunities,” *European Journal of Information Systems*, (22), pp. 1–8.
- Blumer, H. 1954. “What is wrong with social theory?,” *American Sociological Review*, (19:1), pp. 3-10.
- Boell, S., and Cecez-Kecmanovic, D. 2014. “A hermeneutic approach for conducting literature reviews and literature searches,” *Communications of AIS*, (34), Art. 12.
- Bowen, G. 2006. “Grounded theory and sensitizing concepts,” *International Journal of Qualitative Methods*, (5:3).
- Bryant, A. 2002. “Re-grounding Grounded Theory,” *Journal of Information Technology Theory and Application*, (4:1), pp. 25-42.

- Bryant, A. 2009. "Grounded theory and pragmatism: The curious case of Anselm Strauss," *Forum: Qualitative Social Research*, (10:3), Art. 2.
- Bryant, A. 2017. *Grounded theory and grounded theorizing. Pragmatism in research practice*, New York: Oxford University Press.
- Bryant, A., and Charmaz, K. 2007. "Introduction. Grounded Theory Research: Methods and practices," in *The SAGE handbook of Grounded Theory*, A. Bryant, and K. Charmaz (eds.), London: SAGE.
- Bryman, A. 2016. *Social research methods*, 5th ed., Oxford: Oxford University Press.
- Calloway, L. J., and Ariav, G. 1991. "Developing and using a qualitative methodology to study relationships among designers and tools," in *Information systems research: Contemporary approaches and emergent traditions*, H.-E. Nissen, H. Klein, and R. Hirschheim (eds.), Amsterdam: North-Holland.
- Chamberlain-Salaun, J., Mills, J., and Usher, K. 2013. "Linking symbolic interactionism and grounded theory methods in a research design: From Corbin and Strauss' assumptions to action," *SAGE Open*, (July-September 2013), pp. 1–10.
- Charmaz, K. 2014. *Constructing grounded theory*, 2nd ed., London: SAGE.
- Charmaz, K. 2015. "The legacy of Anselm Strauss in constructivist grounded theory," *Studies in Symbolic Interaction*, (32), pp. 127–141.
- Clarke, A., Friese, C., and Washburn, R. 2018. *Situational analysis: Grounded theory after the interpretive turn*, 2nd ed., London: SAGE.
- Cronen, V. 2001. Practical theory, practical art, and the pragmatic-systemic account of inquiry, *Communication theory*, (11:1), pp. 14-35.
- Cronholm, S. 2002. "Grounded Theory in use – a review of experiences," in *Proceedings of European Conference on Research Methods in Business*, Reading.
- Cronholm, S., and Goldkuhl, G. 1994. Meanings and motives of method customizations in CASE environments - observations and categorizations from an empirical study, in *Proceedings of the 5th workshop on the next generation of CASE tools*, Universiteit Twente.
- Dewey, J. 1938. *Logic: The theory of inquiry*, New York: Henry Holt.
- Eisenhardt, K. 1989. "Building theories from case study research," *Academy of Management Review*, (14:4), pp. 532-550.
- Fernandez, W. 2004. "Using the Glaserian approach in grounded studies of emerging business practices," *Electronic Journal of Business Research Methods*, (2:2), pp. 83-94.
- Fernandez, W., and Lehmann, H. 2005. "Achieving rigour and relevance in information systems studies: Using grounded theory to investigate organizational cases," *The Grounded Theory Review*, (5:1), pp. 79-107.
- Fernandez, W., and Lehmann, H. 2011. "Case studies and grounded theory method in information systems research: Issues and use," *Journal of Information Technology Case and Application Research*, (13:1), pp. 4-15.
- Fernandez, W., Lehmann, H., and Underwood B. 2002. "Rigour and relevance in studies of IS Innovation: A grounded theory methodology approach," in *Proceedings ECIS-2002*, Gdansk.
- Fernandez, W., Martin, M., Gregor, S., Stern, S., and Vitale, M. 2007. "A multi-paradigm approach to grounded theory," *Information Systems Foundations*, pp 231-246
- Gasson, S. 2004. "Rigor in grounded theory research: An interpretive perspective on generating theory from qualitative field studies", in *The Handbook of information systems research*, M. Whitman, and A. Woszczyński (eds.) Hershey: IGI
- Glaser, B. 1978. *Theoretical sensitivity: advances in the methodology of grounded theory*, Mill Valley: Sociology Press.
- Glaser, B. 1992. *Basics of Grounded Theory analysis: Emergence vs. forcing*, Mill Valley: Sociology Press.
- Glaser, B. 2001. *The Grounded Theory Perspective: Conceptualization Contrasted with Description*, Mill Valley: Sociology Press.
- Glaser, B. 2008. *Doing quantitative grounded theory*, Mill Valley: Sociology Press.
- Glaser, B. 2010. "The future of grounded theory," *Grounded Theory Review*, (9:2), pp. 1-14.
- Glaser, B. 2012. "No preconception: The dictum," *Grounded Theory Review*, (11:2), pp. 1-6.
- Glaser, B., and Strauss, A. 1967. *The discovery of grounded theory*, New York: Aldine
- Goles, T., and Hirschheim, R. 2000. "The paradigm is dead, the paradigm is dead ... long live the paradigm: the legacy of Burrell and Morgan," *Omega*, (28), pp. 249-268.
- Goldkuhl, G. 2005. "Socio-Instrumental Pragmatism: A Theoretical Synthesis for Pragmatic Conceptualisation in Information Systems," in *Proceedings ALOIS-2005*, University of Limerick

- Goldkuhl, G. 2012. "Pragmatism vs. interpretivism in qualitative information systems research, *European Journal of Information Systems*," (21:2), pp 135-146.
- Goldkuhl, G. 2019. "The generation of qualitative data in information systems research: the diversity of empirical research methods," *Communications of AIS*, (44), Article 28.
- Goldkuhl, G., and Cronholm, S. 2010. "Adding theoretical grounding to grounded theory – Towards Multi-grounded theory," *International Journal of Qualitative Methods*, (9:2), pp. 187-205.
- Goldkuhl, G., and Cronholm, S. 2018. "Multi-grounded theory – an update," *International Journal of Qualitative Methods*, (17), pp. 1-5.
- Hart, C. 1998. *Doing a literature review: Releasing the social science research imagination*, London: Sage.
- Heath, H., and Cowley, S. 2004. "Developing a grounded theory approach: a comparison of Glaser and Strauss," *International Journal of Nursing Studies*, (41), pp. 141–150.
- Henderson-Sellers, B., Ralyté, J., Ågerfalk, P., and Rossi, M. 2014. *Situational method engineering*, Berlin: Springer.
- James, W. 1907. *Pragmatism. A new name for some old ways of thinking*, New York: Longmans, Green & Co.
- Hughes, J., and Jones, S. 2003. "Reflections on the use of grounded theory in interpretive information systems research," *Electronic Journal of Information Systems Evaluation*, (6:2).
- Kelle, U. 2005. "'Emergence' vs. 'Forcing' of Empirical Data? A Crucial Problem of 'Grounded Theory' Reconsidered," *Forum: Qualitative Social Research*, (6:2).
- Kelle, U. 2007. "The development of categories: Different approaches in grounded theory," in *The SAGE handbook of Grounded Theory*, A. Bryant, and K. Charmaz (eds.), London: SAGE.
- Kendall, J. 1999. "Axial coding and the grounded theory controversy," *Western Journal of Nursing Research*, (21:6), pp. 743-757.
- Klein, H., and Myers, M. 1999. "A set of principles for evaluating and conducting interpretive field studies in information systems," *MIS Quarterly*, (23:1), pp. 67-94.
- Lamp, J., and Milton, S. 2007. "Grounded theory as foundations for methods in applied ontology," in *Proceedings of QualIT-2007*, Victoria University of Wellington.
- Lanamäki, A., and Haj-Bolouri, A. 2019. "Grounded theory methodology as a resource for pluralist information systems research," in *Proceedings ECIS-2019*, Stockholm
- Lings, B., and Lundell, B. 2005. "On the adaptation of grounded theory procedures: insights from the evolution of the 2G method," *Information Technology & People*, (18:3), pp. 196-211.
- Lomborg, K., and Kirkvold, M. 2003. "Truth and validity in grounded theory – a reconsidered realist interpretation of the criteria: fit, work, relevance and modifiability," *Nursing Philosophy*, (4), pp. 189–200.
- Marshall, P., Kelder, J-A., Perry, A. 2005. "Social constructionism with a twist of pragmatism: A suitable cocktail for information systems research," in *Proceedings of 16th Australasian Conference on Information Systems*, Sydney.
- Matavire, R., Brown, I. 2013. "Profiling grounded theory approaches in information systems research," *European Journal of Information Systems*, (22), pp. 119–129.
- Melia, K. 1996. "Rediscovering Glaser," *Qualitative Health Research*, (6:3), pp. 368-378.
- Miles, M., Huberman, A. 1994. *Qualitative Data Analysis: An Expanded Sourcebook*, Newbury Park: Sage Publications.
- Myers, M. 1997. "Qualitative research in information systems," *MIS Quarterly*, (21:2), pp. 241-242.
- Myers, M. 2018. "Qualitative research in information systems," *AISWorld Section on Qualitative Research in Information Systems*, updated version, last modified: September 4, 2018, www.qual.auckland.ac.nz
- Onwuegbuzie, A., Leech, N., and Collins, K. 2012. "Qualitative analysis techniques for the review of the literature," *The Qualitative Report*, (17:28), pp. 1-28.
- Orlikowski, W. 1993. "CASE tools as organizational change: Investigating incremental and radical changes in systems development," *MIS Quarterly*, (17:3), pp. 309-340.
- Orlikowski, W., and Baroudi, J. 1991. "Studying information technology in organizations: research approaches and assumptions," *Information Systems Research*, (2:1), pp. 1-28.
- Pries-Heje, J. (1992) "Three barriers for continuing use of computer-based tools in information systems development - A grounded theory approach," *Scandinavian Journal of Information Systems*, (3), pp. 119-136.
- Reichert, J. 2007. "Abduction: The logic of discovery of grounded theory," in *The SAGE handbook of Grounded Theory*, A. Bryant, and K. Charmaz (eds.), London: SAGE.

- Reimers, K., and Johnston, R. 2008. "The use of an explicitly theory-driven data coding method for high-level theory testing in IOIS," in *Proceedings ICIS-2008*, Paris.
- Richards, C., and Farrokhnia, F. 2016. "Optimizing grounded theory for policy research: A knowledge-building approach to analyzing WTO e-commerce policies," *International Journal of Qualitative Methods*, (2016), pp. 1–14.
- Rodon, J., and Pastor J. 2007. "Applying grounded theory to study the implementation of an inter-organizational information system," *Electronic Journal of Business Research Methods*, (5:2), pp. 71–82.
- Rowlands, B. 2005. "Grounded in practice: Using interpretive research to build theory," *Electronic Journal of Business Research Methodology*, (3:1), pp. 81–92.
- Seaman, C. 1999. "Qualitative methods in empirical studies of software engineering," *IEEE Transactions on Software Engineering*, (25:4), pp. 557–572.
- Seidel, S., and Urquhart, C. 2013. "On emergence and forcing in information systems grounded theory studies: the case of Strauss and Corbin," *Journal of Information Technology*, (28), pp. 237–260.
- Stol, K-J., Ralph, P., and Fitzgerald, B. 2016. "Grounded theory in software engineering research: A critical review and guidelines," in *Proceedings ICSE '16*, ACM.
- Strauss, A. 1987. *Qualitative analysis for social scientists*, Cambridge: Cambridge University Press.
- Strauss, A. 1993. *Continual permutations of action*, New York: Aldine de Gruyter.
- Strauss, A., and Corbin, J. 1990. *Basics of qualitative research. Grounded theory, procedures and techniques*, Newbury Park: Sage.
- Strauss, A., and Corbin, J. 1998. *Basics of qualitative research. Techniques and procedures for developing Grounded Theory*, 2nd edition, Newbury Park: Sage.
- Strong, D., and Volkoff O. 2010. "Understanding organization - enterprise system fit: A path to theorizing the information technology artifact," *MIS Quarterly*, (34:4), pp. 731–756.
- Strübing, J. 2007. "Research as pragmatic problem-solving: the pragmatist roots of empirically-grounded theorizing," in *The SAGE handbook of Grounded Theory*, A. Bryant, and K. Charmaz (eds.), London: SAGE.
- Suddaby, R. 2006. "What grounded theory is not," *Academy of Management Journal*, (49:4), pp. 633–642.
- Thornberg, R. 2012. "Informed grounded theory," *Scandinavian Journal of Educational Research*, (56:3), pp. 243–259.
- Timmermans, S., and Tavory, I. 2012. "Theory construction in qualitative research: From grounded theory to abductive analysis," *Sociological Theory*, (30:3), pp. 167 –186.
- Toraskar, K. 1991. "How managerial users evaluate their decision support? A grounded theory approach," in *Information systems research: Contemporary approaches and emergent traditions*, H.-E. Nissen, H. Klein, and R.Hirschheim (eds.), Amsterdam: North-Holland.
- Urquhart, C. 2001. "An encounter with grounded theory: Tackling the practical and philosophical issues," in *Qualitative research in IS: Issues and trends*, E. M. Trauth (ed.) Hershey: Idea Group.
- Urquhart, C., and Fernandez, W. 2013. "Using grounded theory method in information systems: the researcher as blank slate and other myths," *Journal of Information Technology*, (28), pp. 224–236.
- Urquhart, C., Lehmann, H., and Myers, M. 2010. "Putting the 'theory' back into grounded theory: guidelines for grounded theory studies in information systems," *Information Systems Journal*, (20), pp. 357–381.
- Vaast, E., and Walsham, G. 2013. "Grounded theorizing for electronically mediated social contexts," *European Journal of Information Systems*, (22), pp. 9–25.
- Walker, D., and Myrick, F. 2006. "Grounded theory: An exploration of process and procedure," *Qualitative Health Research*, (16:4), pp. 547–559.
- Walsh, I. 2015. "Using quantitative data in mixed-design grounded theory studies: an enhanced path to formal grounded theory in information systems," *European Journal of Information Systems*, (24:5), pp. 531–557.
- Webster, J., and Watson, R. 2002. "Analyzing the past to prepare for the future: Writing a literature review," *MIS Quarterly*, (26:2), pp. xiii–xxiii.
- Wiesche, M., Jurisch, M., Yetton, P., and Krmar, H. 2017. "Grounded theory methodology in information systems research," *MIS Quarterly*, (41:3), pp. 685–701.
- Wolfswinkel, J., Furtmueller, E., and Wilderom, C. 2013. "Using grounded theory as a method for rigorously reviewing literature," *European Journal of Information Systems*, (22), pp. 45–55.