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Pekkola, Samuli; Hekkala, Riitta; Rossi, Matti; Smolander, Kari

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Samuli Pekkola

Tampere University of Technology, samuli.pekkola@tuni.fi

Riitta Hekkala

Aalto University

Matti Rossi

Aalto University

Kari Smolander

LUT University

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The Magical “We”: Enhancing Collaboration Transparency in Grounded Theory Method in Information Systems Research

Samuli Pekkola

Management and Business
Tampere University
samuli.pekkola@tuni.fi

Riitta Hekkala

Information and Service Management
Aalto University
riitta.hekkala@aalto.fi

Matti Rossi

Information and Service Management
Aalto University
matti.rossi@aalto.fi

Kari Smolander

Software Engineering
LUT University
kari.smolander@lut.fi

Abstract:

Grounded theory method (GTM) has become popular in the information systems (IS) field despite multiple interpretations and disputes about its use and usefulness. This paper analyzes how IS researchers collaborate during the GTM process and how they report on the research process. We analyze a sample of papers from the AIS Senior Scholars' basket of eight that use GTM as their research method to understand how researchers report collaboration in GTM research. We then draw from the previous literature and our own GTM research experiences to illustrate different alternatives of performing collaboration in GTM tasks and their pros and cons in order to help other GTM researchers. We highlight potential issues that arise from different epistemological and ontological stances and provide guidance and examples of how to avoid these issues and how to document the research process.

Keywords: Research Methods, Grounded Theory, Research Process, Collaborative Work.

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1 Introduction

Grounded theory method (GTM) has become a popular research method in the information systems (IS) field (e.g., Urquhart, 2013; Wiesche, Jurisch, Yetton, & Krcmar, 2017) despite its multiple interpretations and ongoing disputes. Birks, Fernandez, Levina, and Nasirin (2013) question the GTM's nature because expert reviewers and editors continue to struggle with the method's types and boundaries while reviewing papers that claim to be GTM studies. GTM allows one to develop theory through uncovering items and relationships that emerge from data. In most reported cases, researchers do not produce a full-fledged theory but rather a conceptual structure or a mid-range theory. Consequently, the theory they develop relies on how they interpret data from a certain perspective. This researcher interpretation is always subjective even though Strauss and Corbin (1994) argue that researchers should make judgments about the interpretation regarding a theory's soundness and that a theory must closely relate to "what is actually going on" (p. 276). Thus, in GTM, the theory emerges from data if the researcher is "sensitive enough" (Urquhart, 2013; Walsham, 2006). Researchers may compromise this sensitivity if they either lack it or force the theory to emerge according to their (initial) assumptions or expectations (e.g., Glaser, 1978). We can observe that collecting and analyzing the data constitutes one key aspect of the GTM research process.

Urquhart (2013) argues that many research papers do not make their GTM coding practices evident. Several reasons may explain why: 1) the researchers used GTM just as a practical coding method rather than a theorizing device, 2) they may find it to explain how they conducted the coding process, 3) they may fear criticism that they did not follow the "right" path or GTM school (Urquhart, 2013), 4) or they did not properly understand GTM (see Butler & O'Reilly, 2010; Sarker, Xiao, & Beaulieu, 2012). Many researchers seem to use the term "grounded theory" as a blanket term for coding and analyzing qualitative data (Birks et al., 2013; Urquhart, 2013). By so doing, researchers obviously neglect the power of grounded theory as a theory-development method.

In order to improve coding, data analysis, and theory refinement in GTM, researchers have proposed different means and approaches. In addition to researcher sensitivity, researchers often mention triangulation and corroboration (see Urquhart, Lehmann, & Myers, 2010; Urquhart, 2013; Sarker, Xiao, & Beaulieu, 2013; Wiesche et al., 2017). Triangulation may take a form of data and dataset, or multiple researchers may analyze different datasets or the same data several times. In the latter case, researchers often believe collaboration to result in less subjective and better theory. For this reason, the literature often asks for so called "inter-coder reliability" (Hruschka et al., 2004). Yet, we lack any evidence that collaborative research activity actually improves theory and its development (see Hruschka et al., 2004; Lombard, Snyder-Duch, & Bracken, 2002).

In this paper, we examine how IS researchers approach GTM and how they report it. We follow Sarker et al. (2012), Urquhart (2013), and Butler and O'Reilly (2010) to uncover the patterns of collaboration and individual efforts during data analysis and theory development. In particular, we address the following research questions (RQ):

RQ1: If researchers conduct GTM research in the IS field as a collaborative activity, how do they collaborate and report their research process?

RQ2: When researchers collaboratively conduct GTM, what are the alternatives and their pros and cons?

To answer these questions, we first conduct an explanatory literature review on GTM IS research by analyzing papers from top IS journals and ICIS proceedings to observe how researchers report the GTM process. Second, we provide a retrospective reflection on our personal experiences from studies in which we used GTM so that we can understand different alternatives and their benefits and disadvantages. These components illustrate how IS researchers report collaboration in GTM, what kind alternatives for collaboration exist, and their pros and cons. The paper ends with discussion and conclusions.

2 Background and Related Research

2.1 Grounded Theory

Grounded theory has been a popular approach to IS research since the early 1990s (see, e.g., Fernández, 2004; Levina & Vaast, 2008; Orlikowski, 1993; Pries-Heje, 1992; Sarker, Lau, & Sahay, 2001;

Urquhart & Fernández, 2006; Urquhart et al., 2010). Researchers have used it primarily as a qualitative research method for gathering and analyzing data (e.g., Myers, 1997; Urquhart & Fernández, 2006; Urquhart et al., 2010). Orlikowski (1993) considers grounded theory worth adopting because its inductive, contextual, and procedural characteristics help one to investigate change. Urquhart (2013) points out that GTM offers well-signposted procedures for producing a precise, rigorous, and replicable theory. Some researchers, such as Rowlands (2005), provide practical guidance for GTM interpretation in IS research and an interpretive framework to build theories from IS practice. Thus, IS GTM research demonstrates the method's applicability. Despite, or perhaps due to the GTM's popularity, researchers have interpreted its role, objectives, applicability, and epistemological and ontological basis in different ways (e.g., Orlikowski, 1993; Pries-Heje, 1992; Urquhart et al., 2010; Wiesche et al., 2017).

A reason for the variety of interpretations may originate from the fact that many IS researchers have applied GTM without knowing that there are actually two schools of GTM, named Glaserian and Straussian after the original authors of the 1965 book (Glaser & Strauss, 1965), Barney Glaser and Anselm Strauss. Even though both schools share the feature "that there should be a continuous interplay between data collection and analysis" (Urquhart et al., 2010, p. 377), they differ in two major practical ways (Covan, 2007; Urquhart, 2013). First, the coding processes and their terminologies differ both between and within the schools. For example, the approaches include open, axial and selective coding, theoretical coding, "coding for process", and Glaser's 23 coding families (Glaser, 2005). Varying interpretations and terminologies have implications to what is regarded as proper GTM. Second, Glaser strongly disagreed with the way in which Strauss and Corbin used coding paradigms designed to provide ready-made tools for the conceptualization process. He felt that "forcing" the coding through one paradigm and/or down one conditional path ignored GTM's emergent nature.

Before iteratively collecting and analyzing the data, researchers need to design initial research objectives and protocols. The Straussian school (Strauss & Corbin, 1990) allows researchers to set research questions beforehand either as externally given, as inspired by the literature, or as emerging from personal experience. In contrast, the Glaserian school (Glaser, 1992) thinks that a focus on predetermined problems prevents researchers from identifying real problems. The Glaserian school sees data collection and analysis as an iterative process that theoretical sampling guides and not as a process whereby researchers can decide the study procedure, the type, and amount of data beforehand. Similarly, the Straussian approach emphasizes the interplay between data collection and data analysis but it takes a more pragmatic approach and proposes systematic data coding and analysis processes. Thus, clear epistemological differences and camps in the GTM exist.

Kenny and Fourie (2015) considered these differences and went further in arguing that three schools of GTM actually exist: classic GTM (i.e., Glaserian school), Straussian GTM, and constructivist GTM, which largely builds on Charmaz's (2006) work. Kenny and Fourie (2015) showed that these traditions significantly differ in terms of coding procedures, philosophical positions, and how one uses the literature. Evidently, these differences influence how researchers collaborate.

The majority of IS research seems to follow the Straussian approach (e.g., Wiesche et al., 2017; Rowlands, 2005; Orlikowski, 1993; Baskerville & Pries-Heje, 1999). Thus, researchers have adopted it as a basis for developing different coding and analysis guidelines for GTM (e.g., Baskerville & Pries-Heje, 1999; Urquhart et al., 2010). Baskerville and Pries-Heje (1999, p. 6) condense these guidelines as follows:

Analysis in a grounded theory approach is composed of three groups of coding procedures called open, axial and selective coding. Open coding is the process of identifying, naming and categorizing the essential ideas found in the data. Axial coding develops a deeper understanding of the relationships in the phenomena underlying data through the process of connecting various data categories that were determined during coding. Selective coding develops the theory that best fits the phenomena by identifying a story that reveals the central phenomenon (the core issue or "core" category) under study. These procedures do not entirely occur as a sequence, but each overlaps the others and iterates throughout the research project. The approach mitigates problems inherent in "ex post facto hypothesizing" by an analysis process that continuously validates theoretical concepts against newly collected empirical data.

After the theory, mid-range theory, framework, or conceptual structure has emerged, researchers need to report it. Quite often, the researchers collaborate by co-authoring their results.

2.2 Collaborative Research

Researchers often define collaborative work as “multiple individuals working together in a conscious way in the same production process or in different but connected production processes” (Schmidt & Bannon, 1992, p. 14). Collaborative research evidently shares this definition: multiple individuals (researchers) working together in the same or connected research processes. This work is:

Social in the sense that the object and the subject, the ends and the means, the motives and the needs, the implements and the competencies, are socially mediated. However, people engage in collaborative work when they are mutually dependent in their work. (Schmidt & Bannon, 1992, p. 14)

The quote points out two important characteristics. Mutual dependence necessitates coordination among the participants to accomplish a task. Similarly, participants have to articulate (divide, allocate, schedule, etc.) their individual activities so that they can coordinate in general. Both coordination and articulation create an overhead cost compared to individual activities. Hence, in order to conduct collaborative research, individual researchers have to be prepared to pay, and then actually pay, the overhead.

The social nature of collaborative research adds other issues. As collaborative research is (often project-based) teamwork, participants need to handle project and team management, coordination, and other team effort-related issues, such as knowledge sharing. Pennington (2011) lists some challenges that collaborating research teams face. For example, individuals' histories, epistemologies, framing differences, and application scales impedes researchers from sharing knowledge; different and incomplete knowledge bases impede researchers from generating hypotheses; and differences in vocabulary, assumptions, and perspectives hinder researchers from creating a common understanding and concepts. These problems occur even when the collaborating researchers have relatively similar backgrounds (Jeffrey, 2003; Pennington, 2011).

Thus, collaborating researchers have to cope with several social issues in different points of the research process. For example, they may need to define research questions together and collect and analyze the data in a collaborative manner. So, in situations with many researchers, they have to first establish a common ground (Clark, 1996) to be able to communicate, share ideas, and build a shared understanding about the research objectives and process and about the data and its significant features. If they succeed, collaborative research becomes possible. If they do not, the research will not produce significant or rigorous results.

Next, we will study a sample of collaboration in GTM studies in the IS field to see how researchers have conducted and reported them.

3 Collaboration in GTM in IS research

To understand how IS GTM researchers collaborate, we conducted a literature review in which we collected a sample of grounded theory studies in IS research. We chose three full volumes of some IS Senior Scholars' basket of eight journals and three ICIS proceedings as examples. We assumed the journals to include high-quality GTM research, while we included ICIS to gain broader coverage and to obtain a basis to discover possible differences in reporting GTM studies in journals and conferences. We did not focus on identifying or analyzing all IS GTM studies but on understanding how IS GTM researchers report their collaboration. We consequently had a look at different outlets over a given period of time. Also, we paid particular attention to the *EJIS* GTM special issue in 2013, with the assumption that it represents exceptionally high quality GTM.

We included three volumes each from *Information Systems Journal* (*ISJ*), *Journal of the Association for Information Systems* (*J AIS*), *Journal of Management Information Systems* (*JMIS*), *Management Information Systems Quarterly* (*MISQ*), and *Journal of Strategic Information Systems* (*JSIS*)¹: the most recent completed volume, and two older (but not consecutive) volumes to increase the timespan. The first author systematically analyzed the research method section in each paper to see whether they explicitly used GTM or whether they used only just GTM ideas, concepts, or terminology. This analysis resulted in 29 examples of collaboration in GTM after removing editorials, commentaries, and two single-authored GTM papers. Again, the first author identified GTM papers in the 2010 to 2012 ICIS proceedings by first

¹ We excluded *EJIS*, *JIT*, and *ISR* since our organizations did not have an access to them.

searching for the term “grounded theory” (with quotation marks) anywhere in the paper and then for the term grounded theory (without quotation marks) in the abstracts. This resulted in 61 papers. Once again he systematically analyzed method sections. After excluding research-in-progress (RIP) papers, single-authored papers, and papers that discussed the method but did not use it, the ICIS sample comprised 19 papers. Complete sample comprised 48 papers (see Table 1).

Table 1. Type of GTM Research in ICIS 2010-2012 and some IS Journals

Journal/ ICIS papers		Collaboration in GTM		Single-authored GTM	
<i>EJIS</i> special issue 2013		4		0	
<i>ISJ</i> (vol. 23, 25, & 26)		6		0	
<i>J AIS</i> (vol. 13, 15, & 17)		5		0	
<i>J MIS</i> (vol. 29, 31, & 33)		2		1	
<i>JSIS</i> (vol. 22, 24, & 25)		6		1	
<i>MISQ</i> (vol. 36, 38, & 40)		6		0	
Sum (journals)		29		2	
ICIS papers	Collaboration in GTM	Single-authored GTM	RIP GTM	No GTM study	SUM
ICIS 2010	6	0	2	10	18
ICIS 2011	9	1	6	5	21
ICIS 2012	4	1	13	4	22
SUM (ICIS)	19	2	21	19	61

The analysis revealed that researchers most often collaborated as an integrated team without specifying how they collaborated or who did coding or analysis. For example, in most cases (15/19 ICIS papers and 26/29 journal papers), the papers reported that “we” did the coding and/or analysis. Consequently, one could not tell who actually coded and/or analyzed the data as “we” could refer to joint collaborative endeavor where the team works tightly together or simply represent a customary style of writing². Thus, neither we (the authors of this paper) nor any scholar reading those studies could be sure if the researchers really shared the same assumptions or objectives from the research or distinguish the way in which they collaborated. This may be problematic as individual researchers do not necessarily share the same epistemological stance or conceptual and historical backgrounds. Discrepancies in these issues impact the quality of the emerging theory. With such discrepancies, researchers’ “sensitiveness” evidently varies and can result in a biased theory: it may be forced by someone’s assumptions and expectations, or it may lack some central issues. In either case, theorizing does not result in a good theory that describes the phenomena.

Reviewers often ask for “inter-coder reliability” since many see it as a means to assess the reliability of qualitative research (Campbell, Quincy, Osserman, & Pedersen, 2013; MacPhail, Khoza, Abler, & Ranganathan, 2016). However, this kind of positivistic conceptual harmonization in which one considers reality as objective and independent from the observer adds a significant coordination cost and overhead to the research process. The team of coders may initially have different hermeneutic interpretations and concepts that produce different codings. Their harmonization requires significant extra effort (Hruschka et al., 2004). No paper we analyzed reported these issues.

Further, we noted that some authors used GTM only as a method to code data. For example, Winkler, Goebel, Benlian, Bidault, and Günther (2011), among many others, used initial coding families to identify the coding categories, while Ghazawnah and Henfridsson (2011, 2013) used coding families to support their multiple case studies and to steer their future research. In other words, they did not thoroughly exploit GTM’s power: that the theory emerges from the data. Rather, they used it only to code data. This practice could explain why GTM studies received criticism “for having a relatively low level of theory development” (Urquhart et al., 2010, p. 358).

² Even single-authored GTM studies used “we” when presenting the methods (e.g., Dubé, 2015).

Yet, the situation is not desperate. Researchers have described in detail how their research progressed and how they have collaborated with one another. For example, Dulipovici and Robey (2013, p. 113) note that “the first author performed the initial coding of the transcripts and the documents, following an open coding process. For the other steps of the data analysis, both authors were actively involved.”. Thus, one can see, at least to some extent, how they collaborated and whose epistemological frames dominated. Also, for example Su, Levina, and Lou (2010) report that “the field researcher” did the coding. In the papers we examined, we found that researchers mostly collaborated in this way.

Interestingly, *J AIS* papers seemed to provide more details about the coding practices than other journals. For instance, Keil, Smith, Iacovou, and Thompson (2014) report that “three of the four researchers conducted the interviews”, and Strong et al. (2014) report that “two researchers were present at each interview”. Yet, again, they provided no more information. Also, Nardon and Aten (2012, p. 777) describe their process as follows:

We worked as a team to code and analyze the data. We each read and coded the data, and alternated who took the lead at various times throughout the process. We took detailed notes on our impressions and emerging codes, discussed any discrepancies, re-read the data, and refined and revised our coding categories until we had accounted for all of the data. We then created tables displaying the data and codes.

Consequently, they had common objectives and common theory development and considered their different perspectives and understandings. In fact, although the researchers who authored the papers in the *EJIS* GTM special issue used different ways of collaboration, they also explicitly described their research process and how they divided labor. Still, they only used inter-coder reliability to check the collaboration method (Mattarelli, Bartolotti, & Macri, 2013; Gasson & Waters 2013). We can speculate that the practice of inter-coder reliability arises from the reviewing process rather the GTM process.

4 Forms of Collaboration in GTM

Collaboration can occur in various ways during the research endeavor. Jenkins's (1985) very generic description of the research process (see Figure 1 for illustration) defines basic steps for any research methodology, which makes it also useful for analyzing collaboration in GTM. Although researchers can also perform the steps at the beginning—idea, (initial) literature research, setting the research topic, and deciding the research strategy and experimental design—in a collaborative manner, researchers must more or less define them before starting the GTM process. Thus, despite the research process's recursive nature (which the arrows illustrate), we focus on Jenkins's latter steps: capturing data, analyzing data, and publishing results. They form the core of GTM: a contextual, inductive, and iterative process of data collection, coding, analysis, and theory refinement (Urquhart et al., 2010), and finally reporting. Although researchers may skip or return back to the literature research step to avoid forcing concepts from a priori literature to the data, we condense such activities into theory-refinement activities that researchers perform before, during, and/or after they collect and analyze data. Thus, in this paper, we adopt Jenkins's generic model as a basis for analysis and detail its last phases.

Figure 1. Jenkins's (1985) Generic Research Process with Adapted GTM Characteristics

The data-collection phase represents an obvious place to collaborate because researchers can divide resource-intensive data collection work, such as interviews and observations, among themselves. Researchers can also collaborate in various ways in the data-analysis phase. Yet, researchers face several challenges in collaborating, which we discuss in Section 2.2. Researchers may collaborate in the

analysis phase by, for example, using a common code set while coding the data (such as Ghazawnah & Henfridsson, 2013), partitioning the data, or having variations in their coding perspectives (as in Walsh, Gettler-Summa, & Kalika, 2016). Researchers may also collaborate in the later phases of the process in which they refine theoretical results and identify connections to earlier research. Finally, researchers may also collaborate in the final stage where they report the results. Figure 2 illustrates a general-level research process, which we use next to describe possible variations in cooperation. For simplicity, we present the process sequentially, although data collection, data coding, and theory refinement may occur in parallel, in an alternating manner, or recursively both in practice and according to both GTM schools³.

Figure 2. The Research Process for Collaboration in GTM⁴

By reflecting on our experiences in collaborating in GTM research, we identified at least four successful⁵ ways to collaborate in GTM research. We all collaboratively identified these ways by systematically analyzing our individual research projects and their data collection and analysis practices. In Sections 4.1 to 4.4, we analyze each alternative, their benefits and disadvantages, and how they may impact GTM research's rigorosity.

4.1 Mode 0: Collaborating Only in Theory Refinement or Reporting

In its simplest form, researchers do not collaborate in the research process's early phases. An individual researcher, such as a doctoral student, collects data and does most of the analysis alone, which follows Glaser's (1992) instructions. Although a researcher might collaborate with others in the early phases, such as in selecting a research topic and selecting a research strategy, a single researcher executes the study's most laborious parts and parts that require the researcher to interpret the data. The other parties step in when the data-collection and -coding process has produced results that they can refine for presentation. Collaboration partners can provide conceptual help and constructive critique already in the theory-refinement phase (Mode 0a in Figure 3), or they may serve only as a writing aid (Mode 0b in Figure 3). We assume that researchers most commonly conduct this type of collaboration (e.g., a supervisor may help a student in presenting results or an external expert can participate in theory refinement and/or reporting without having access to data).

Figure 3. Mode 0: No Collaboration in Data Collection and Coding

In our own research history, we have used both Mode 0a and Mode 0b. For example, a journal paper (Smolander, Rossi, & Purao, 2008) resulted from the first author's (of that paper) earlier research activities in collecting, analyzing, theorizing, and publishing a conference publication (Smolander, 2002). The second and third authors of the paper helped the first author to crystallize the theoretical result in reporting. They also used their previous experiences and studies in formulating the discussion part as the journal version required a significant quality improvement. We consider this kind of collaboration in the reporting phase as a typical example of Mode 0b.

³ Also, for simplicity and conformity, we harmonize terminology to follow the Straussian GTM school even though the examples include studies that researchers conducted according to the Glaserian tradition.

⁴ We exclude earlier phases since we assume that researchers have commonly agreed on the objectives and methods before collecting data.

⁵ The term "successful" connotes that academic gatekeepers accept the papers and that peer-reviewed academic outlets publish them.

Smolander et al. (Forthcoming) and Salmimaa, Hekkala, and Pekkola, (2018) represent examples of Mode 0a. The first author of both papers did the open and axial coding and identified important theoretical dimensions. The second and third authors neither participated in data collection nor accessed the data directly, but all authors collaboratively discussed the identified dimensions and refined the theoretical result to its final form. The authors wrote the report collectively. This collaboration exemplifies collaboration in the theory-development phase.

Single researcher activities in collecting and coding data evidently remove possible epistemological discrepancies and the need to coordinate work and reduce the coordination overhead. From this perspective, the researcher produces epistemologically sound emerging theory in an easier and cheaper manner. However, the resulting theory emerges from a narrower basis since it intensively depends on the single researcher's sensitivity towards the data. Also, data is consistent since a single researcher collects it. However, since a single researcher cannot distribute the load to others when collecting data in Mode 0, the researcher must bear the heavy load alone. Although collaboration activities in theory refinement and reporting try to provide and ensure broader perspectives, collaborating partners do not possess the same understanding about the phenomena and data as the coding researcher since they have not necessarily well established common ground.

4.2 Mode 1: Joint Data Collection, Individual Analysis, and Theory Development

Alternatively, two or more researchers can collectively collect data (see Figure 4). After they have done so, each one independently analyzes and reports on it. We call this approach Mode 1, and it requires that researchers share a common research interest and that they can achieve it with a common dataset. This kind of collaboration saves resources in the data collection by providing possibilities for collecting larger datasets in comparison to individual studies.

Figure 4. Mode 1: Collaborating Only in the Data-collection Phase

The collaborating researchers who agree on suitable data-collection targets divide the work to collect data among themselves, which saves resources. Each researcher can collect their own share of the data set. Yet, researchers may not be able to gain a common theoretical sampling. Or, at least, they may find data collection difficult to interweave with data coding since they make decisions about collecting data together (based on common research interests) rather than alone (based on a single researcher's unique interpretations). As a result, this limits the possibilities of theoretical sampling.

Riingu, Taipale, and Smolander (2010) / Kasurinen, Taipale, and Smolander (2010) and Alanne and Pekkola (2015) / Salmimaa et al. (2018) exemplify two groups of papers that use this mode. They all used an overlapping, collaboratively collected dataset but had different objectives and viewpoints. Each study's researchers considered different objectives when constructing the interview themes. However, they also collected some interviewee-specific data in line with the theoretical sampling principle.

Joint data collection evidently saves resources as multiple researchers can collect a large dataset. Later, each researcher may focus on their own research interest. Although "partially outsourcing" the data collection to fellow researchers in this way sounds tempting, researchers will not obtain a completely coherent or comparable dataset unless they extremely carefully define the interview protocol (or other data-collection protocol). In our cases, we found it very difficult to code, analyze, and theoretically sample the data iteratively since different interviewees emphasized different details and since data collection was not interwoven with its analysis. Thus, although emerging theory in such a situation originates from a larger and possibly sounder, and, consequently, "better" dataset, researchers' epistemological differences in collecting data may bias the theory.

Thus, Mode 1 saves data-collection costs as researchers can obtain large datasets in collaboration with others. However, the overhead in coordinating the data-collection and data-collection protocol and

establishing a common ground might be significant since the approach does not allow continuous interplay between data collection and analysis.

4.3 Mode 2: Common Coding Scheme – Common Analysis

Alanne, Kähkönen, Pekkola, and Smolander's (2017) paper serves as a practical example of the Mode 2 approach. That paper's first two authors had their own data partitions, which they collected independently but by using similar interview protocols. Initially, they coded the data individually in open coding. After this initial coding, they attempted to create a common coding scheme. They organized several group work sessions to seek a consensus. After finding consensus in the coding scheme, they continued open coding and consensus seeking in axial and selective coding (Strauss & Corbin, 1994). The paper's last two authors participated only in theory refinement and reporting, which means that they used Mode 0.

This kind of approach whereby researchers share both data and coding (possibly by using a shared database), which Figure 5 illustrates, obligates strong ontological and epistemological assumptions. In this approach, researchers (at least implicitly) assume that they can form a common ontological structure through which they conduct the coding, which also includes epistemologically a “received view”—that the researchers can see the phenomenon under study at least to some extent uniformly and probably to some extent with prior constructs. After coding, theory refinement and reporting continue as a collaborative activity.

Figure 5. Mode 2: Common Coding Scheme, Common Analysis

With this approach, researchers can divide the work in both collecting and analyzing data and, consequently, study large-scale phenomena and larger data sets that a single researcher could not. Mode 2 can be a cost-effective way to conduct major research projects that analyze and possibly compare large datasets. However, its ontological and epistemological assumptions make it challenging in practice since it questions some basic GTM features, such as emergence, induction, and interpretation. Thus, this mode complicates emergence and induction and requires agreed-on coding schemes. Interpretation takes a form of collaboration with constant negotiation and consensus seeking. In addition, Mode 2 requires appropriate and technologically more demanding tools and shared databases than other approaches do.

4.4 Mode 3: Common Objectives and Theory Development, Data Partitioning for Individual Coding

Mode 3 focuses on integrating individual analyses at the theory level, but researchers do not share data or coding activities (Figure 6). The researchers need to first agree on common research objectives, possibly have their own sets of data, and do the coding in an inductive manner with their own emergent schemes. From the viewpoint of a single researcher, the process resembles Mode 0 in which the researcher acts independently in the beginning. After each researcher has collected data and almost completed coding it, they try to integrate their possibly different theoretical understandings by building a theory according to their interpretations in coding. After successful theoretical integration, researchers as a group (but also individually in their own coding) can go back to the data and find more grounding to the theoretical constructs that they built earlier. The researchers can repeat this coding-refinement cycle until they agree, are content with their theoretical results, and can report the final findings.

Figure 6. Mode 3: Common Objectives, Data Partitioning for Coding, Common Theory Development

We have used this mode in an international study where all parties could not access all data due to confidentiality and language differences (Larsen, Pääväranta, & Smolander, 2012). The researchers (in two separate countries) had their own data that they coded independently but according to agreed objectives. After the initial coding, the researchers met, described, and discussed their findings and agreed on a common theoretical framework based on the independent and inductive coding results. They then continued coding their own dataset from the formed framework's perspective and sought evidence especially for and against the framework. After this analysis, the researchers met again, identified the evidence-based changes to the initial framework, and formed the final theoretical model.

Mode 3 requires intensive coordination and shared understanding about issues of interest. Thus, this mode has a significant overhead to conduct collaborative research and establish a common ground. Without paying this price, epistemological and ontological differences might hinder rigorous theory development. However, when researchers deal with those issues properly, they can collaboratively build emerging theory. Mode 3 is most likely quite objective since several researchers have reached a consensus about it, and it originates from a large dataset. Because researchers do not fully share the data (i.e., they each have their own data), they do not need to reach consensus in interpretation, which, from the GTM point of view, may be positive because it does not violate two the basic GTM features emergence and induction. Codes and categories may emerge inductively from the data and in the individual analyses of data partitions. Researchers seek possible consensus only at the theory level.

5 Discussion

Collaborative research represents a seemingly simple solution to cope with researcher subjectivity in GTM. Yet, researchers can find it difficult to collaborate in practice since they have different assumptions on research design and questions, methods, their details, and the research process in general. Indeed, our collaborative GTM examples illustrate these discrepancies. Yet, GTM studies in the IS field often ignore these differences and do not describe their research practices. Most often, they simply report that “we” performed the research. One can also commonly find this phenomenon in other fields (see Lombard et al. 2002).

According to our analysis, IS GTM research has rarely reported the joint coding process and actual coding mode. Far too often the researchers report only that “We started coding shortly after the beginning of our data collection efforts” (Abraham, Boudreau, Junglas, & Watson, 2013, p. 59) or “We conducted selective coding...of our transcripts...to analyze.... We then refined our codes” (Leonardi, Bailey, Diniz, Sholler, & Nardi, 2016, p. 465). Thus, one does not know how the data collection and/or coding actually took place, whether one or more researchers participated, and how they shared their findings. If many people participated, it would be valuable to know how they coped with their potential epistemological, conceptual, and procedural discrepancies (i.e., issues that evidently have an impact on the quality of the emerging grounded theory). This impreciseness also makes the retrospective analysis of the collaboration processes impossible.

5.1 Problems with Varying Schools of GTM

If two GTM researchers, one representing the Glaserian approach and the other the Straussian approach, start to collaborate, they may have to change their research approach, procedures, and even epistemological stance. For instance, the questions “what is correct GTM” and “how should it be conducted” will emerge (Wiesche et al., 2017). For example, some of our modes may not satisfy all GTM reviewers as they might follow a certain school and its tradition even though some researchers claim GTM

to be “philosophically neutral” (Walsh et al., 2015, p. 594). While the majority of the collaboration in IS GTM papers in our sample represented either Straussian or Glaserian GTM schools, we found some examples (Gasson & Waters, 2013; Mourmant & Voutsina, 2010) that cited and used both schools at the same time. For some researchers, the school question does not pose an issue, but, for others, it might prevent collaboration completely. Furthermore, some reviewers can find the wrong school an issue.

In analyzing the differences in GTM traditions, Kenny and Fourie (2015) point out how the GTM schools impact collaboration in GTM. Although the schools claim to be paradigm neutral, Kenny and Fourie (2015) argue that they significantly differ from one another. Thus, if the researchers (or the gatekeepers they try to convince) share different philosophical positions about GTM, they face a significant adjustment overhead in attaining appropriate, shared understanding between them. Similarly, different coding procedures and conventions and the amount of freedom or strictness there either steer the researchers to follow the same practices and obtrude them to a certain philosophical mold or increase their coordination needs when they have to ensure that they take appropriate practices. The same applies with using the literature: while Glaserian schools suggest suspending pre-existing knowledge, the other two⁶ take a more liberal stance. Again, researchers have to coordinate the research process and how they use the literature.

Luckily, this fuzziness of GTM schools and GTM process seems not to present a problem in IS research in general. We identified good examples of well-reported GTM. We also identified papers that just reported being GTM but that did not provide much information on how they did it or that were evidently GTM but did not mention it as their primary method (e.g., each *JMIS* paper did not mention GTM as their primary method although they evidently used it). Also, we found no major differences between papers in the ICIS proceedings or the basket of eight journals about how they have reported GTM's collaborative aspects. Nor did we observe improvement over the years (we analyzed each journal for only a four- to five-year period), which indicates that either the IS community at large (authors, reviewers, editors) does not completely understand the method so that it cannot assess its quality or that we, IS researchers, are not so picky about the method so long as the results seem to be appropriate. This observation concurs with Urquhart (2013), Sarker et al. (2012), Butler and O'Reilly (2010), and Wiesche et al. (2017). However, we note that our sample contained only 48 IS GTM studies, and we might have missed some best examples. Nevertheless, 48 papers published in our premier outlets still say something.

5.2 Collaboration Needs to be Defined

Collaboration requires extra work. Managerial activities such as dividing, allocating, and scheduling tasks add overhead costs. Establishing common ground (Clark, 1996) and understanding about the data, datasets, codes, data-collection protocols, and software and maintaining it throughout the research process require significant efforts from all partners. For example, harmonizing the codes may add significant overhead cost if all researchers do not share or fully understand initial assumptions or conceptual issues. The lack of understanding and acknowledging this extra work could be another explanation for vaguely described collaboration processes in the IS field.

Despite the criticism, we do not mean to suggest that researchers should not collaborate on GTM research. Quite the contrary. Collaboration lessens researcher dependency and results in an emerged theory that will likely exceed what an individual researcher could produce. However, individual researchers and readers have their own perceptions, experiences, expectations, personal or cultural understanding, and beliefs that influence them. Consequently, researchers need to make the research process and their roles and stances explicit for everyone. In other words, following Pennington (2011), we, as IS researchers, need to address these issues with guiding questions, understandings of GTM, epistemological conflicts, levels of analysis, code harmonization, initial assumptions, and each researcher's subjectivity in order to enrich the rigor of collaboration in GTM. Researchers can do so through training (e.g., when a supervisor teaches the method to a student), by discussing and agreeing on these issues before entering the research activity, or leaving them intact if they already share similar interpretations and experiences. If they do not do these activities, they may end up reporting GTM studies in a form that “we did something” without segregating their roles and contributions. Under such circumstances, potential epistemological or conceptual problems in the GTM remain hidden.

⁶ According to how Kenny and Fourie (2015) classify GTM schools: Glaserian, Straussian, and constructive approaches.

5.3 Good Examples and a Shared Understanding

We also found several “good” examples that explicitly dissect “we”. For example, in the *EJIS* special issue on GTM, Gasson and Waters (2013) and Mattarelli et al. (2013) did their coding in three phases: first, two researchers open coded a part of the data; second, they shared their codes and coding memos and developed a set of shared codes. This process follows Mode 2 (see Section 4.3). They then swapped their datasets and “re-coded” the new set. Obviously, this kind of code sharing and re-coding of the other researcher’s data decreases researcher dependence. It also provides hands-on instructions to a less experienced GTM researcher. Even more importantly, it provides evidence to the skeptical reader wondering how the authors coped with different coding discrepancies.

When IS researchers collaborate in GTM, it seems that no matter which mode they have adopted, they assume a shared understanding of the potential points of interest and relatively similar epistemological stances. This common ground (Clark, 1996) becomes especially critical in the data-coding phase. While Abraham et al. (2013) implicitly had a common ground, Gasson and Water (2013) explicitly stated how they established it. They initially used a topic guide and, later, a set of shared codes. Those codes understandably guided the later coding, analysis, and theory refinement. However, using topic guides may limit researchers’ sensitivity and lead GTM studies to be positivistic case studies where the theory does not freely emerge from the data but is steered by the researchers’ initial assumptions⁷ (see Butler & O’Reilly, 2010). The guides and codes consequently steer later activities and may hinder researchers from identifying and classifying new emerging issues. As any classification can experience such limiting consequences (Bowker & Star, 2000), researchers should carefully consider how and when to share the codes. Concepts and codes shared too early may form very strong assumptions and force the emerging theory to go in a certain direction. Sharing the codes too late, on the other hand, results in difficulties in harmonizing either the codes or already emerged individual theories.

Urquhart et al. (2010) touch on this issue when they propose guidelines for theory development in GTM. The guidelines (constant comparison, iterative conceptualization, theoretical sampling, scaling up, and theoretical integration) do not explicitly address how a group of researchers should actually collaborate in practice. However, reflecting our modes to the theory development principles shows that, evidently, collaboration affects the first three principles. In some modes, such as Mode 1 or Mode 2, one simply cannot return to the data-collection phase from data-analysis and conceptualization activities. Thus, the modes will violate the good principles and require flexibility and empathy from readers to understand and accept such a violation. The modes also point out a need to develop the guidelines further.

5.4 Collaborating in GTM

As the main takeaway from our paper, researchers should consider the importance of a well-documented and transparent collaboration process. They need to spell out the “we”. We argue that doing so has far more importance than using a complex formula that calculates inter-coder reliability (MacPhail et al., 2016). Explicitly stating who did what and when and how helps the critical reader to evaluate the quality of emerging grounded theory. Although the *EJIS* GTM special issue more explicitly described the collaboration, we lack any guide that provides advice on how researchers should describe it. Most GTM guides, such as Urquhart et al. (2010) or Gioia, Corley, and Hamilton (2013), do not consider collaboration issues but focus on theory development in GTM, or qualitative research in general. While valuable, these instructions ignore potential epistemological discrepancies in collaboration.

To advance collaboration in GTM, we reflect on our experiences and present four collaboration modes in this paper, which we summarize in Table 2 below. Each mode has its benefits and disadvantages. For example, Mode 0 is quite cheap in terms of coordination overhead. Yet, it is quite vulnerable to subjective interpretations as collaborating partners assist only in theory refinement or reporting. Mode 3 requires intensive coordination between the actors and conscious activities in establishing common ground and epistemological stances but possibly results in a more concise, objective, emergent theory.

As a summary, we advise researchers to use the modes of collaboration as a basis for:

- Deciding which mode best fits with their research endeavor, research questions, and research strategy

⁷ Gasson and Waters’ (2013) study represents a rare example where authors consciously acknowledge this danger.

- Considering what activities they need to conduct to establish and maintain a common ground, how much coordination overhead and coordination activities they are interested in and capable of investing in, and then doing those activities throughout the research process
- Reporting the research process honestly and transparently in their scientific publication.

The gatekeepers (editors and reviewers) may use the modes of collaboration when they assess the credibility of an emerging GTM theory and the research paper and provide feedback and instructions to the authors on how to improve it.

Table 1. Pros and Cons of our Modes

Mode	Pros	Cons
Mode 0: collaborating only in theory refinement or reporting	<ul style="list-style-type: none"> • No epistemological discrepancies between the researchers • Less coordination since one researcher collects data and conducts the coding alone • Consistent data collection and interpretation since a single researcher performs it 	<ul style="list-style-type: none"> • Limited shared understanding among the collaborators as everyone does not see the data • Collaborators lack a clear role • The contribution of collaborators is not based on direct evidence
Mode 1: joint data collection, individual analysis, and theory development	<ul style="list-style-type: none"> • Saves resources in data collection as data collection is a common activity • Researchers can continue on their own based on their own interests 	<ul style="list-style-type: none"> • Researchers collect the data set not only for a single study, which may bias the data as different researchers may unintentionally emphasize different issues • Epistemological differences in data collection are possible • Includes a coordination overhead • Theoretical sampling not fully possible
Mode 2: common coding scheme, common analysis	<ul style="list-style-type: none"> • Work division is possible both in data collection and analysis • It is possible to study large-scale phenomena • Cost effective 	<ul style="list-style-type: none"> • Requires strong ontological and epistemological assumptions, a common ontology • Challenges basic GTM features: emergence, induction, and interpretation • Theoretical sampling requires consensus • Requires appropriate tools and software
Mode 3: common objectives and theory development, data partitioning for individual coding	<ul style="list-style-type: none"> • Enables individual coding, analysis, and interpretation • Combines independence with collaborative theory development • Enables use of sensitive and confidential material that is not shared with all researchers 	<ul style="list-style-type: none"> • Requires intensive coordination and forming of shared understanding • Epistemological and ontological conflicts are possible • May require more work in theoretical consensus and analysis synchronization

6 Conclusion and Contributions

Collaboration in GTM seems to be both rare and difficult to conduct. Very often, researchers use GTM only as a data-analysis method and not as a technique to build theory (Urquhart et al., 2010). We can understand this perspective as collaborating throughout the GTM process is difficult due to researchers' epistemological and conceptual differences. It is much easier to collaborate only in the coding phase, analysis phase, or theory refinement phase. For example, we assume that most GTM studies that used magical "we" as in "we did something" to report how they conducted coding actually meant that one researcher did the coding and that they used plural "we" only to follow the customary way to report IS research. Or perhaps the researchers removed these details when the editor made a last-minute request to cut the paper length. As the reviewers were satisfied, the researchers could easily remove methodological details. Following Stol, Ralph, and Fitzgerald (2016), it is also quite possible, that the researchers did some "method slurring" to hide the weaknesses in their, or the editors', understanding about GTM.

To increase the rigor in collaboration in GTM, researchers need to make the research process explicit. This means that they need to unambiguously articulate their roles and tasks in the data-collection, data-analysis, and theory-refinement phases. In this way, readers can better interpret the research process and

its details, so that they may also evaluate the emerging theory's quality. With poor documentation, how the collaborating researchers constructed their shared understanding and how they conveyed it in the form of a theory remain mysteries, which makes it very easy to criticize GTM studies for having low quality. In order to improve the situation, researchers may use our modes as examples of how they can collaborate in GTM studies and what issues they should report. Gatekeepers may use the modes to understand possible discrepancies. This suggestion parallels with Sarker et al.'s (2012, 2013) call for increased transparency as researchers need to document collaboration in great detail.

This study builds on our reflections from practice. Thus, we do not claim, for example, that the four modes present a complete list of issues to consider in collaboration in GTM or that those four represent the only alternatives. Instead, researchers should perceive them as examples for how they can conduct collaboration in GTM. Our reflections can help IS researchers in collaborating in GTM research and gatekeepers (editors, chairs, reviewers) in evaluating the quality of such research. For example, simply by paying attention to the research process and the roles and tasks of each researcher, researchers will evidently make their studies more transparent and, consequently, more rigorous. No matter whether a single researcher interpreted data and constructed a theory or whether multiple researchers did so in a collaborative effort, they should still make it explicit and transparent.

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About the Authors

Samuli Pekkola is Professor of information systems at Tampere University. He has worked as visiting associate professor in University of Agder, and held several positions in University of Jyväskylä. His research focuses on users in different manifestations of information systems, IS management and acquisition, and enterprise architectures. His research papers have appeared in journals such as *Information Systems Journal*, *Scandinavian Journal of Information Systems*, *Communications of the Association for Information Systems*, *Enterprise Information Systems*, *Enterprise Information Management*, *Decision Support Systems*, *the DATA BASE*, and others. He is Associate Editor in *Business Information Systems and Engineering*, and a member of advisory board and past Editor-in-Chief of *Scandinavian Journal of Information Systems*. He serves as the president of the Scandinavian chapter of the AIS.

Riitta Hekkala, PhD, is Assistant professor of Information Systems at Aalto University School of Business, and an adjunct professor at Tampere University. Riitta's research interests include feelings, emotions and power issues in information system development projects, and IT use in personal and organizational contexts. She has published her work, for example, in IS journals such as *Information Systems Journal*, *European Journal of Information Systems*, and *Business & Information Systems Engineering*

Matti Rossi is Professor of Information Systems at Aalto University School of Business. He is past president of the Association for Information Systems, and has been the principal investigator in several major research projects funded by the Technological Development Center of Finland and the Academy of Finland. He was the winner of the 2013 Millennium Distinction Award of the Technology Academy of Finland for open-source and data research. His research papers have appeared in journals such as *MIS Quarterly*, *Journal of Association for Information Systems*, *Information and Management* and *Information Systems*. He has been a senior editor of *Journal of Association for Information Systems* and *Database*, and an associate editor for *MIS Quarterly*. He is the past editor in chief of *Communications of the Association for Information Systems*.

Kari Smolander is Professor of Software Engineering in School of Engineering Science, LUT University, Finland, and adjunct professor in Department of Computer Science, Aalto University, Finland. Currently he is the head of Software Engineering Laboratory in LUT University. He has more than 170 refereed research papers in international journals and conferences. His current research interests include change in software and systems development practices and organizations.

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