Chapter Thirty-seven

Grounded Theory Research Methods

DEBORAH DOUGHERTY

Grounded Theory Building Research: Some Principles and Practices

The purpose of qualitative research is to delineate some of the essential qualities of complex social phenomena. Many concepts in organizational theory, such as learning, replicating routines, power, authority, dynamic capabilities, or chaos, involve intricate webs of causes, effects, processes, and dynamics. Qualitative analysis characterizes these intricate webs so we can appreciate what a phenomenon is really like in practice, how it works, and how it is affected by other patterns in the organization. Qualitative research is based on the principle that social life is inherently complex, which means that organizational issues are inextricably bound up in ongoing social action among people in the situation (Geertz, 1973; Giddens, 1979; Strauss, 1987; Azevedo, this volume). People are continually making sense of and enacting organizational life by interacting with each other and by invoking taken-for-granted practices and understandings. Organizational issues are sticky, or connected with, part of, and influential on the context. The goal of qualitative research is to capture the essence of these sticky inter-relations for a particular research purpose.

This chapter summarizes my approach to the qualitative analysis of complex organizational phenomena, which is grounded theory building. Grounded theory building (GTB) *builds theory;* it does not test or verify theory. GTB theories capture the inherent complexity of social life by conceptualizing organizational issues *in terms of* their interactions with the context of practice. The goal of grounded theory is to tease out, identify, name, and explicate themes that capture the underlying dynamics and patterns in the blooming, buzzing confusion that is organizational life. GTB reaches into the "infinite profusion" (Weber, see Giddens, 1971) of social action in organizations to sift out the gist of a particular phenomenon. GTB is a way to understand why and how structures, conditions, or actions might arise, to ferret out generative mechanisms (Van de Ven and Polley, this volume), to explore conditions under which their effects might change or stay the same, and to qualify their temporary and emergent aspects.

The inconsistencies in some organizational theories and the limited variance that many theories explain indicate that these theories need to be re-fashioned, indeed re-grounded, to capture a richer, more realistic understanding of ongoing organizational action. Grounded theory building is a way to systematically capture richer, more realistic understandings. The method therefore contributes significantly to the quality and to the reach of organization studies.

The goal of this chapter is to articulate, in a pragmatic fashion, both the promises and the challenges of GTB for the field of organization studies. A hands-on emphasis is useful two reasons. Epistemological discourse provides important information about the underlying logics of this kind of study, and the knowledge it develops and why (see Azevedo, this companion). Methods literature reviews highlight core differences between, boundaries around, and possible connections among various approaches. But a pragmatic discussion, like grounded theory building in general, provides additional insight by illustrating the approach's contribution to organization studies within the actual flow of everyday research practice. Moreover, my basic argument is that grounded theory building brings important (and I think essential) capabilities to the field, but to realize its potential the community of researchers as a whole needs to address the challenges GTB faces. These challenges are not particular to this method, but reflect growing pains for organization studies overall as the field attempts to mature. Rather than exhort organization researchers to "do something," this hands-on emphasis allows me to suggest several particular practices through which we as a community can address certain challenges of both GTB and organization research more generally.

Four Principles for GTB

Even a practical description of a research approach begins with a general conceptual framework for two reasons. First, putting our conceits aside for a moment, many organization theorists know very little about qualitative methods. Few receive the same extensive training in qualitative methods as they do in quantitative ones, and so may unthinkingly apply inappropriate or irrelevant research principles to the development or peer review of a grounded theory study. While general values for good research may apply to all methods, grounded theory's particular techniques for choosing a topic, gathering and organizing data, carrying out the analysis, and drawing systematic inferences differ fundamentally from the familiar techniques of theory testing research in which most people have been trained. A research effort based on mixed up principles may result in less than sensible or useful results. Second and more pragmatically, any research is a complex enterprise, and researchers become stuck and confused. The principles map this particular terrain, helping to identify problems and alternate possibilities.

Table 37.1 outlines four principles that guide grounded theory building research so it captures the inherent complexity of social life in an effective, useful manner. The table also notes the research task(s) that each principle in particular illuminates, and two rules of thumb that connect each principle to research practice.

Table 37.1 Principles that guide GTB research

Principles	Research tasks addressed	Rules of thumb for applying principle to research practice
GTB should capture the inherent complexity of social life.	Kinds of research questions asked How questions are examined	Rule 1: Explore unique characteristics of a phenomenon. Rule 2: Look for social action that underlies manifest structures.
The researcher must interact deeply with the data.	Kinds of data to be gathered, and how analysis proceeds	Rule 3: Data must reflect, convey social action, meaning. Rule 4: Subjectivity cannot be eliminated
Grounded theory intertwines research tasks: Each is done in terms of others.	How the analysis unfolds	Rule 5: Ground problem statement in the phenomenon. Rule 6: The analysis process determines what data to get, how much data.
GTB stands on its own merits.	All of the above, plus how to write up research	Rule 7: GTB should not be confused with exploratory or pre-testing studies. Rule 8: "Validity" and "reliability" depend on coherence, consistency, plausibility, usefulness, and potential for further elaboration.

PRINCIPLE 1: GTB SHOULD CAPTURE THE INHERENT COMPLEXITY OF SOCIAL LIFE

The first principle re-iterates the overarching perspective for qualitative research: grounded theory building should capture the inherent complexity of social life. This principle frames the research questions and how they are approached, since the subject of this method is always the actual, ongoing organizational phenomena themselves, not theory or constructs about them. GTB *centers on* the blooming, buzzing confusion of social life, going beneath or beyond such constructs as "density dependence," "job satisfaction," "race," or "functional structure," for example, to see what people actually do and think, how they enact such structures, how the many processes in the situation might interact dynamically, and how, why, or under what conditions these enactments might "slip." The object is to create new theory or to elaborate upon existing ones by discovering and articulating core themes and patterns among them that explain the particular organizational phenomenon being studied. Grounded theory is more a "process" than "variance" approach (Mohr, 1982; Langley, 1999; Pentland, 1999), and emphasizes the views of the people in the situation, which is referred to as "verstehen"; see Van Maanen (1979) for a primer on the social self (Strauss, 1987). While some suggest that qualitative research occurs in natural settings (Lee et al., 1999), it is more than that: qualitative research is about what actually goes on as people in the situation understand it.

RULE 1: EXPLORE UNIQUE CHARACTERISTICS OF A PHENOMENON

Exploring unique aspects of the phenomenon helps to capture the inherent complexity of social life because it pushes the researcher to get deeply into the actual situation and try to understand all the nuances, interplay, and connections. Exploring unique characteristics is less about looking at outliers and more about delving into a phenomenon deeply enough to understand how all the issues interact. For example, in his analysis of the Mann Gulch Disaster (a major forest fire in which 13 smoke jumpers died), Weick (1993) delved deeply into unique events, thoughts, and actions of these men in that situation. From that, he produced a general theory of how organizations unravel, what the social conditions of such unraveling are, and how organizations can be made more resilient. In part because he explored the unique characteristics of this event, Weick's theory about the relationships of role structure and meaning takes a variety of possible contingencies into account, and enables us to think about the unraveling of structure when these and other contingencies might vary. Capturing unique events in general terms reflects deepness.

RULE 2: LOOK FOR SOCIAL ACTION THAT UNDERLIES MANIFEST STRUCTURES

Second, look for the social action that underlies apparent order and generates unique, complex variations. "Social action" refers to the patterns of thinking and acting that are collectively meaningful to people in the situation, and includes the interactions through which people generate and enact shared interpretive schemes, those schemes themselves, and the frameworks of roles, rules, procedures, routines, and so on that embody meanings (Weber, 1947; Hinings et al., 1991; Barley, 1996). In other words, how is the situation meaningful to those in it, what is the structure of these meanings, and why do these particular meanings hold sway? I emphasize interpretive schemes, but one might study other kinds of social action such as grammars (Pentland and Reuter, 1994) or the variety of ideas that constitute feminist approaches (Calas and Smircich, 1996). My point: get past a construct and its presumptions of order, and explore the actual social order in practice. GTB does not assume that a certain structural element or condition will operate in the theoretically proscribed manner, since people can understand that element or enact it in surprisingly diverse ways. The complexity of social life tells us that many organizational issues have an emergent quality, since any instance of a general phenomenon may be a unique, contingent actualization of it (Sahlins, 1985). Suchman and Trigg (1993) emphasize "situated action," which means that people do not plan actions and then follow through without reflection, but rather are guided by partial plans that are locally contingent.

For example, one might theorize that the more an organization relies on specialized labor, the more knowledge it can absorb. A theory testing study would measure specialization and knowledge absorption, and then correlate the two. Grounded theory building seeks to understand how, why, and under what conditions does specialization lead to knowing more, and to develop a theoretical understanding about the underlying processes and actions. GTB goes past the construct "specialization of labor" to ask how do people understand their own specialization and its relationships to work and responsibility? Do they see their work in terms of the work of the group, or do they

insist that their work be translated into the principles of their own specialization before they tackle it (Leonard-Barton, 1995)? What properties of the organizational context affect these understandings? (See also Bailyn and Lynch (1983) who explore how and why engineers are and are not satisfied with their careers over time; these dynamics would also inform an exploration of organizational knowledge.)

One promise of GTB research is that it addresses different research questions. Theory testing research asks whether or not a construct operates, or how much is the effect, while GTB asks how, when, and why. It may be important to know whether or how much something affects something else, but it also may be important to know what that something really is in practice, and how, when, and why its effects occur. This promise also challenges the community of organization researchers to recognize and appreciate the role of these different kinds of questions. How GTB data are gathered and analyzed helps to explicate these different questions.

PRINCIPLE 2: THE RESEARCHER MUST INTERACT DEEPLY WITH THE DATA

The second principle of grounded theory building is that the researcher interacts deeply with the data, carrying out a detailed, microscopic investigation. Some practices for how to engage in a deep interaction with the data are illustrated in the next section, so here I summarize two rules of thumb that guide the development of data for grounded theory building.

RULE 3: DATA MUST CONVEY SOCIAL ACTION

Interacting deeply with the data means that one examines the data closely, looking at minute changes and exploring "what is going on here." The data must enable such close interaction, and usually come from observations, interviews, letters, stories, photographs, archival details, and other text-like material that convey social action. However, a study might incorporate a variety of data types and sources, mingling in abstracted measures perhaps with richer archival accounts and interviews. Provided the researcher can articulate clear, reasonable connections between data and the underlying complex of social action being studied, what constitutes data is open.

I use open interviews to capture people's stories of everyday practice in new product development, because these reflect people's interpretive schemes about customers, technology, and product work (my subjects). To understand connections between behaving and thinking, it would be appropriate to observe behavior as in ethnography, or perhaps to participate in the social action as in participant observation or action research; see Denzin and Lincoln (1998) for one of many overviews of the numerous methods in qualitative research. Hirsch (1986) explored the transformation of corporate governance as takeovers became prominent during the 1980s, by examining the language used in newspaper stories to frame and explain this heretofore unacceptable behavior. Goffman (1979) used photographs in advertisements to delve into how we as a society think men and women behave, reflecting back some important insights about the complex social action of gender. Dougherty and Kunda (1990) used photos of customers in annual reports to explore how the notion of market orientation varied across firms in an industry over time. Each example also details why the data source is appropriate for the

purpose.

This rule of thumb means that the data must capture the subject – the actual organizational phenomenon. Consider the study of the processes of knowledge transfer by Szulzanski (1996), or absorptive capacity by Cohen and Levinthal (1990). Rather than gather data that directly reflect these processes and their emergent relations with the social context, these studies used outcome indicators to see if the theorized process was there. Neither study examined the processes directly to see how they actually work, what people understand and do, what else beyond what was measured was going on, and what affected these patterns of social action in what way. These studies contribute by "verifying" that these complex processes of knowing and knowledge transfer are important, and by sorting out some contextual factors. They cannot deepen our understanding of these processes except by ungrounded inference. By the same token, GTB cannot verify that a process exists across diverse settings, nor properly estimate relative importance for some outcome. Both kinds of research do different things in different ways.

RULE 4: SUBJECTIVITY CANNOT BE ELIMINATED

GTB researchers worry about biases from subjectivity, but subjectivity is inherent so eliminating it is not an option. The analysis process is subjective since the researcher must interpret her data in a situated fashion to discern the unique issues or emergent characteristics of the meanings. One reason that grounded theory builders work so closely with their data is to reduce the negative effects of subjectivity, by continually "pushing" possible inferences. Van de Ven and Poole (this volume) summarize many of the subjectivity challenges of field research, and how to work with them.

GTB studies different questions with different kinds of data than theory testing research, challenging organization researchers to develop different standards for research practice. Some concerns about subjectivity arise from the failure to recognize the different research question. Recently, a manager was worried that since I would talk to only some of the people at his plant I might get a biased view of the situation. He thought I would use the data to determine if they (and he) were doing the right things in the right way. Grounded theory building cannot make such determinations. Instead, I was seeking to understand how the issue (in this case, a strategic redirection) was grounded in this particular situation, to explore what people were doing that seems to be working and not, and why and how these processes were unfolding. Standards for judging how well subjectivity is handled are based on whether or not the researcher adequately addressed *these* questions of what, how, and why. However, there are no precisely articulated, recipe-like standards for GTB, which relies instead on the structuring of the research process.

PRINCIPLE 3: GROUNDED THEORY INTERTWINES RESEARCH TASKS: EACH DONE *IN TERMS OF* OTHERS

The third principle frames the overall GTB research process to heighten the researcher's heedfulness about bias and about doing good work in general. As Strauss (1987) argues, the theories and inferences that emerge from this research approach must be

plausible, useful, and allow for their own further elaboration. Intertwining the particular research tasks helps to assure plausibility, usefulness, and potential for further elaboration.

Put simply, research comprises four basic tasks: planning the study, gathering the data, analyzing the data, and writing it up. Grounded theory building relies on the parallel development of these tasks, as each proceeds in terms of each other task. Consider an analogy with product innovation, often based on the parallel development of market, design, manufacturing, and other activities which proceed in parallel and which play off of each other (Clark and Fujimoto, 1991; Yang and Dougherty, 1993). In innovation, unfamiliar problems arise constantly and are often most quickly and effectively addressed for the product by working each out in terms of the possibilities and constraints in all the functions. The intertwining of functions limits options, focuses attention on critical performance issues, and otherwise helps to structure the problem.

The same kind of parallel processing structures grounded theory building for the same reasons, and provides checks on the inferences being developed. Planning the study, gathering and analyzing the data, and writing the work up all occur together over time, and each is informed by the other. The problem being studied is unstructured (since the objective is to articulate it), so structure comes from the process of study. As Bailyn (1977) puts it, research is based on a constant interplay between the conceptual and empirical planes. A researcher gathers data to explore a question, but discovers new possibilities in that data and so hypothesizes about this other effect, gathers more data, and thinks through alternate conceptual issues. Similarly, Strauss (1987) argues that grounded theory building combines deduction, induction, and hypothesis testing. The ongoing iterations among the research tasks and processes of deduction, induction, and hypothesis testing help hone insights so that they plausibly represent some aspect of social life, are useful in that they articulate dynamics that were heretofore hidden from view, and can be elaborated further because the deliberate searching through alternate events allows one to articulate possible effects fairly precisely.

RULE 5: GROUND THE PROBLEM STATEMENT IN THE PHENOMENON

The research question or problem should be stated in terms of the phenomenon being studied, since a simple, real question helps one stay grounded empirically. The complexity of social life means that any problem will encompass multiple issues – it will explode out. If the researcher starts with a construct that abstracts issues from the context, the high level of abstraction broadens the scope, so the researcher may be trying to make sense of far too much from far too narrow a purview. For example, examining whether formal versus informal structure inhibits innovation could drop a researcher into a black hole, since the answer to such a question will be "yes and no." We already know that innovation, like any complex work, requires some formal or articulated mapping of roles, relationships, priorities, and responsibilities; see Nord and Tucker (1987) and Jelinek and Schoonhoven (1990) for good examples of GTB. To state this question in terms of the phenomenon in real life as informed by other studies, one asks: What kinds of activities are formalized, how, and why, in successful versus unsuccessful projects? How does formality occur, and how do the various manifestations of formality help to order or disorder the collective work?

One should also frame the question with a thorough literature review of the phenom-

enon, not a literature review of abstracted constructs about the phenomenon. Glaser and Strauss (1967) warn against becoming so immersed in theory that we miss the real insights in the data. While true, we must be aware that a vast literature already exists for how things actually work, even if a certain construct has received little attention. A good literature summary moves a study past re-invention of the wheel, leverages real wisdom, and connects the work to existing theory so other researchers can make sense of the findings. Pragmatically, the inherent complexity of social life means that the researcher needs some focus and a way to keep generating focus. A good frame helps to make sense of what is seen and maps the way to other studies for more help as the analysis unfolds. The various studies cited in this chapter provide many examples of the use of literature, and illustrate how literature summaries can help justify and specify the question, shape the analysis, help with coding and data display, and draw useful conclusions.

RULE 6: THE ANALYSIS PROCESS DETERMINES THE AMOUNT AND KIND OF DATA NECESSARY

The data are developed as the analysis proceeds. The researcher delves into "what is going on here" in the data, articulates preliminary themes, and creates generative questions about them. He or she then explores these possibilities by examining other events, incidences, or activities in which this theme is likely to occur, proceeding via "theoretical sampling" until the theme or category is "saturated." Theoretical sampling, according to Strauss (1987), is directed by the evolving theory: one samples incidents, events, and actions to compare and contrast them, seeing whether and how the emerging themes actually capture and help understand the social action as it occurs in alternate events and incidences. When additional analyses do not provide any new insights, the theme is "saturated," and the researcher moves on to other themes.

The subtitle for this rule of thumb should be: contrast, contrast, contrast! The data must contain opportunities for multiple comparisons and contrasts among events, incidences, and activities *in order to* trace the potential theoretical theme thoroughly. A good set of data always captures alternate situations or variations of some kind, so that the researcher can see how (and if) emerging insights and their implications actually play out.

Unfortunately, there are no hard and fast standards for how much data one needs for grounded theory building. The answer depends on the researcher's judgment of whether or not the emerging theory plausibly and usefully captures the underlying complexity of the particular piece of social action being examined. Does the theory make good sense of this phenomenon, address the focal question well, and clearly articulate central dynamics – what they are, how they work and evolve, how they interact with other themes? Can the researcher provide a plausible justification for the data: why they fit the problem and are an adequate basis for theory? Were the themes discovered really run to the ground, so to speak? That is, did the researcher go beyond induction to iterate among deduction, induction, and hypothesis generating?

Obviously one cannot study everything about a phenomenon, since any study brackets out a slice of organizational life. But the researcher should both develop a thorough enough understanding of this slice to propose specific, observable, and insightful implications for how it interacts with other aspects of organizing, and present these results

coherently. If the best one can do at the end of a study is to make a broad, general call for "more research," then one definitely has not done enough analysis. And the research probably does not have enough data. How GTB presents the analysis and the resulting data of course differs from theory testing work, since the logic of analysis differs. The challenge to the field of organization studies is to develop ways to capture and present the results from this different logic of analysis.

PRINCIPLE 4: GROUNDED THEORY BUILDING STANDS ON ITS OWN MERITS

These principles indicate that grounded theory building is (or should be) very systematic, very carefully executed, and very comprehensively analyzed. Grounded theory building provides unique insights into organizational life and therefore stands (or falls) on its own merits. It is not a prelude to nor subset of quantitative research, and must not be confused with the latter, since it intent is different. Two rules of thumb help to frame the overall research enterprise.

RULE 7: GTB SHOULD NOT BE CONFUSED WITH PRE-TESTING

This rule of thumb drives home the idea that grounded theory building differs fundamentally from the more familiar quantitative work and needs to be judged on its own merits. Quantitative researchers may pre-test an instrument to verify that how they measure a variable makes sense to people, but the variable itself remains given. The purpose of this prelude is quite distinct from grounded theory building. Research designed to verify an instrument does not ask grounded theory building questions, like: Do the variables actually fit the situation? Are they useful in some way to the people involved? How well do they capture the underlying social action? For example, a quantitative researcher in a pre-test might ask if the measures of "union commitment" make sense to people, and measure "commitment" reliably (using quantified techniques for so measuring). A qualitative researcher might ask what "union commitment" really means to people and how it informs, or not, their choices at work and at home. The two are not the same.

RULE 8: "VALIDITY" AND "RELIABILITY" DEPEND ON COHERENCE AND CONSISTENCY, PLAUSIBILITY, USEFULNESS, AND POTENTIAL FOR FURTHER ELABORATIONS

Finally, validity and reliability for GTB on depend on epistemological judgments for how the study is developed, not on the application of particular techniques such as proper sampling, or measures of consistency for indices. Azevedo (this companion) explains that theories are like maps of a particular terrain, and thus "are valid in so far as they enable us to act successfully in pursuit of our interests." She adds that while different maps abstract different features of the territory, to be valid and reliable they should be coherent and consistent with other maps. Or the emerging theory is, as Strauss (1987) puts it, plausible, useful, and allows for its further elaboration. Because of the infinite profusion of social life, no one can explain everything about a social phenomenon, and there may be other explanations or narratives for other purposes; see Van de Ven and

Poole (this volume) for discussion of this idea. The goal is to capture the dynamics and interactions in the situations studied well enough to explain 'what is going on here,' and to generalize from this situation by hypothesizing in clear, specific effects and inter-actions for other situations.

Unfortunately, there are no widely agreed upon standards for how to judge any of these characteristics of good qualitative research. Moreover, there are many conflicting or incommensurate standards to choose from (Czarniawska-Joerges, 1992; Glaser, 1992). I doubt that agreement upon a single set of standards is useful for qualitative study, or even possible. To be sure, validity and reliability for any good research that addresses the complexities of organizing are judgment calls. My point is that judgment is all grounded theory building has. People in a multi-disciplinary domain like organization studies find it hard to make such complex judgments. It is easier and more comfortable to reject an article because it has respondent bias than because it is not plausible. To help overcome the challenge of judging the merits of a grounded theory building study, the researcher must articulate the study's grounds for validity and reliability sharply, fully, and clearly. The researcher must make a clear, cogent case for why this approach to this question is useful and important, how the analysis was carefully and heedfully done, and how and why the theory being built contributes to our ongoing understanding of organizational life. However, for their part readers, especially editors and reviewers, must learn to hear and understand these arguments, and to appreciate the study on its own merits based on the principles of grounded theory building.

Practices for Analyzing Data for GTB

GTB is also enormously gratifying and very doable, despite the lack of standards, and this section details some practices for it. While all research tasks are important, guides already exist for the overall research approach and how to gather data – e.g., ethnography, case study, clinical analysis, interviews, content analysis, archival studies; see Denzin and Lincoln (1998), and for how to write up the results, Van Maanen (1988) or Golden-Biddle and Locke (1997). Relatively less is written on what to do with the data once you have it, so I develop some practical tips for this aspect of GTB. Van de Ven and Poole (this volume) provide practical tips for mapping out processes and their generative mechanisms from the enormous amount of data from field studies. These GTB practices for data analysis both complement their broad mapping techniques and provide a way to discern underlying mechanisms.

Strauss (1987) outlines three facets of data analysis that I use (and no doubt twist). The facets proceed simultaneously, but the first facet is emphasized more in the beginning of a study, and the last facet more near the end. The goal is to discover and name categories (or as I call them, themes) that capture the pattern of social action that the study is seeking to understand.

1   *Open coding* – finding, labeling the themes or categories in the data. This facet of analysis runs throughout, but in the early stages the researcher tries to generate as many themes as possible, to assure that the data are thoroughly analyzed, and to assure that the analysis is open to what is really going on. Open coding includes what Strauss calls dimensionalizing, or making distinctions within the

theme on such issues as conditions, consequences, interactions, tactics and strategies. One engages in open coding any time a new insight arises, or any time the theme remains less than crisply labeled or articulated.

2 *Axial coding* – intense analysis around one category at a time across the data. The analysis revolves around the axis of one theme at a time, as the researcher checks to see whether and how much a particular theme permeates the data. Axial coding generates cumulative knowledge about the relationships between that theme and others.

3 *Selective coding* – coding systematically and concertedly for the few core themes that best capture, hold together, and/or link up with other themes. As theory building, the object is to arrive at a nice, simple understanding that also accounts for, or is in terms of, the complexity of social life. Selective coding searches for the main concern or problem for people in the setting, what sums up the substance of what is going on in the data. Other themes are subservient to this one: if one "pulls" the core theme out, most of the other important themes will be pulled along with it.

This illustration emphasizes the first facet, open coding, but some selective and axial coding processes are summarized at the end. The study concerns the organizational capabilities that enable sustained product innovation, and this example focuses on one capability: market-technology linking. My basic question: what is the nature of the capability that enables people in organizations to gather the right knowledge about markets and technologies at the right time and put it all together in the right way for multiple products? I cannot review the extensive literature on this question here, but bear in mind that the analysis always is framed by these insights (Dougherty, 1996; Dougherty et al., 2000).

The following example of data represents less than 1 of 8 pages of one interview, from 1 of 125 interviews (or, 0.1 percent of the whole data set). In this excerpt, a marketing manager compares his unit's former, non-effective approach to product development with their current practices:

> (Director of market analysis and planning for a small business unit in large textiles manufacturer, comprised of over 50 business units): I came to the business 7 years ago. It had a traditional organization with a director of development and a bunch of engineers, and a marketing manager and salesmen. They would go find customers and get a quote on a product, and bring it back and drop it in a box, and the engineers would pick them up and do them. The salesman would go back to the customer and show it and say is this OK. We were doing hundreds of these costings, and very few would get to the sample stage, and of those very few succeeded. Our hit rate was very low. Bob [unit mgr] recognized that we needed a new organization, so we turned the organization upside down . . . The salesmen were horrified if anyone visited with their customers. They would say this is my customer and I have him fat, dumb, and happy. Everything the engineers worked on was screened through the sales people. They never heard the voice of the customer. We had marketing, and engineering teams were doing maintenance work to keep the customer happy.
>
>   Then with the new organization we had the new ventures team to do new markets and innovation, and pull in people from across the organization. To see if they will work on this, we would say this is a wonderful opportunity . . . You need the right people. We have a variety of people, some people with more leadership than others. I was on the new venture

team for years. You need a good basic understanding of some portion of manufacturing – you can't understand all of it. We are really a team – strong in yarn, weaving, chemical engineering. We draw on resources inside the team, really do this in the early stages. For example the luggage project. We did a screen and it looked like a very good idea. We got a list of all luggage and backpacking manufacturers and divided it up and we were all making phone calls. We looked inside to see what resources we had. Team members leave the security of the team and select people cross functionally. We selected a yarn plant and got them involved. We sit down with a plant manager and ask who can I work with. The same thing at the weaving, dyeing and finishing plants. We help them understand the needs and wants, do the QFDs, have manufacturing on the team to help with the QFD, and ask them if they have time to go with me to the customer plant. The development engineers take the process engineers to several customers.

The goal of open coding is to surface a variety of possible themes in the data. To do so, look closely at the data and stick to what is there. Do not make second-hand attributions about psychology or industry effects, or based on imaginary answers to better questions, or anything else that is not in the data. Ask questions like: What is actually happening in the data? What study are these data pertinent to? What are the basic problems faced by the people? What is the main story here (from Strauss, 1987)? Initial analyses are always sentence by sentence, and I typically spend 2 or more hours with assistants analyzing just a few pages of one interview.

The following is verbatim from one page of coding notes on the excerpt above that illustrate our very first "cut" at surfacing and exploring possible themes. Following the notes I go back and "dimensionalize" a few of them to illustrate the coding process:

1 "They would go find a customer and get a quote on a product," physicality of product
2 "drop it in a box," objectified customer needs, turned them into a thing
3 "costings" very narrow criteria, slim view
4 "were doing maintenance work," disconnected from customers, were doing dumb work; a very sequential process.

   Compare to the second paragraph:

5 "this is a wonderful opportunity," contrasts significantly with "costings"
6 One student said: I am struck by this being a story of separation plus integration.
7 Unless they focus on customers it is an amorphous world, need a focus to make sense; it is difficult to have cohesion without customer focus.
8 In first para, everything is an abstraction, now a switch in language; before was boxed, bounded; switched to things scattered around and are drawing in, like crystallization.
9 "They never heard the voice of the customer." He invokes front end, and then says, "You need a good basic understanding of manufacturing." This is a starting point and then they anchor in the customer. They can see both ends, and have a grip on the back end and the front end of the process, versus a sequential process in the first para. They "had a basic understanding of manufacturing . . ." – it is an opening, front and back, integration is always possible; it is a dual

thing, they are integrated. They begin to know what questions to ask, like can we do it, solve technical problems. They are asking the right questions, what is feasible. Manufacturing is transformation, not a commodity; they input transformation.

10   "strong in yarn . . ." reflects deep interdependencies, organic integration like Durkheim said; it is a moral thing (we read Durkehiem's *Division of Labour in Society* and we were able to draw in common understandings from theory).

11   Technology is created from the skills as applied to the customer, customer satisfaction and technology are deeply enmeshed in each other. These technologies are skill sets, not hardware. (Student drawing on her chemical engineering expertise): These are processes which are flexible, provide an infinite pool of resources, lots of potential; they are not like a refinery or a distillation column, but are in terms of potential. Versus fixed, tangible in first para

12   "You need the right people . . ." "We draw on resources." So, maybe humanizing? He never talks about functions, is that it?

13   Resources: good language; people seen as resources; the team connects together the separate skills

Hang on to the research question (the capability for market-technology linking), since any good data will have many insights on lots of issues, and one can bog down easily. This initial cut is entirely provisional, but by thinking through possible themes, one quickly surfaces a variety of ideas that might have bearing on market and technology knowledge.

The first item is about how people linked their product with customers. It struck us that people framed the product and the technology as a physical entity. Strauss's dimensionalizing regime helps to get past the manifest structures to the underlying social action. Consider the conditions of physicality, or why people treated the product as a physical entity. Looking back at the data, we see that the person describes "the traditional organization," or fixed managerial roles that segment bunches of engineers and marketing people. The separation of these functions perhaps reduced technology knowledge to an abstraction? Consequences of the physical nature: they would "go find customers" as if customers are also physical entities that can be matched up to the technology. Physicality makes the linking process physical? In addition, the technology seems given, fixed, closed off like Latour's (1987) "black boxing." As part of the iterative nature of analysis (principle 3), the researchers draw on comparisons including other studies to help surface possible themes. Latour suggests that once a technology has been black boxed, knowledge of how it was developed and why and how to change it are cut off. This insight opens up another seam in the data: how knowledge of technology becomes limited, stilted.

The other three coding items from the first paragraph of the excerpt elaborate upon the objectified nature market and technology knowledge. Both kinds of knowledge are stripped of their nuances and emergent possibilities. Dimensionalizing the idea about narrowness or "slimness" of the criteria suggests the following: conditions – perhaps the sequential nature of the work required an articulated bridge between departments; consequences – since knowledge is stripped away, people cannot judge what should be linked to what. Consider item 4 along with item 1, on the relationship with customers. We inferred that the engineers were disconnected from customers. "Doing maintenance

work" suggests that they were not thinking about new approaches to solving customer problems, but rather tweaking existing solutions and products. They were "doing costings," or meeting an abstracted idea of a price quote, not really developing new products.

Comparing coding items 1 through 4 with items 5 through 13 from the second paragraph describing their more effective product development practices demonstrates the power of contrast. Item 5 indicated that labeling the product as a "wonderful opportunity" differed significantly from labeling it as a "quote." Dimensionalizing articulates potential aspects of a possible theme. Conditions: now product developers work in a team to attract other participants rather than process a quote. The work shifts from processing to attracting others. The term "opportunity" presents the work as an important activity perhaps, no longer "maintenance work." The technology becomes an activity, not a fixed, physical thing. Product development itself becomes a full-blown flow of events, not just a "quote" on a piece of paper. Consequences: the more innovative view involves people, while the costing is just an outcome of engineering work. Consider item 11, where we see technology and customer satisfaction "go hand in hand:" analytically perhaps they are mutually constitutive (i.e., one creates the other over time), while in the former approach the link between technology and the market was like sticking things together.

Just these few coding ideas on this tiny fraction of the data indicate very different views of "the market," of working with customers, and of the meaning of the product and the technology. I usually continue with open coding for a number of weeks or months (with bi-weekly coding sessions), looking at different interviews in this company, in other innovative companies, and in less innovative companies. After each session I write up an analytical memo to summarize our thinking along with the original coding notes. This process generates many possible themes, hones others, and transforms yet others.

A combination of axial coding and just plain iterating back and forth between the empirical and theoretical planes led us to identify possible core themes – those few that capture much of what is going on, and which become the theory. One possible core theme is "work is defined as relationship with customer," which emerges when we compare the second paragraph with the first, since working with customers is central to effective innovative work but not to ineffective work. This relationship is embedded directly in their day-to-day work, and seems to ground their efforts, framing the work so that numerous nuances and possibilities can be considered. Also in this brief paragraph and our preliminary analysis are several ideas that suggest tensions between market and technology. Item 6 in our notes is about a ". . . a story of separation plus integration," suggesting that both go together in juxtaposition. Item 8 suggests "crystallization" as a metaphor. The dynamics of linking market and technology knowledge are clearly different: sequential and disconnected in the non-effective approach, but transforming and creative in the effective one. We eventually realized that the "linking" relationship was one of sensemaking (Weick, 1995), or iterating between intersubjective sense from working with customers and technology on the one hand and generically subjective sense captured in rules for business and opportunity on the other. This core theme captures a number of ideas from the open coding, connects with literature concerning tacit versus articulated knowledge, and redefines the relationship as juxtaposing, not just balancing or translating. Other core themes include how knowledge itself was framed at different levels of innovative action. Each of these core theme possibilities

is subjected to axial and selective coding, to see if they hold across the data and through the situation, respectively, and to fully ground them in these data.

The process can be aided with various computerized techniques (the researcher must always interact deeply with the data since a computer cannot, but the computer can help store ideas, flag possibilities, and surface patterns). The data analysis process is onerous, exacting, time consuming, but robust and systematic if done right. Also if done right, one can readily produce some frequency counts, and even generic indicators of core themes. For a particular example, Dougherty and Heller (1994) used content analysis to enumerate problems and solutions with new product development across 134 interviews to help analyze the illegitimacy of innovation (their core theme). The frequency counts helped to display the idea that innovation was illegitimate, and allowed the researchers to examine different relationships in the data that might not be obvious otherwise. Other studies cited here used a variety of techniques for counting, displaying, and categorizing the data.

Conclusion

I have focused on how to deliver the unique promises of GTB by presenting some principles and practices for defining questions, developing and analyzing data, and formulating grounded theory. Each and every one of one the rules of thumb here can be extensively critiqued along a variety of epistemological or ontological dimensions, and such philosophical wrestling is important. Staying in the practical realm, however, this essay also highlights some challenges in the practice of GTB that prevent its promises from being exploited fully. I suggest that the same challenges may prevent organization research in general from addressing the complexities of organizational action fully. Grounded theory researchers must of course do good work and present their work fully, cogently, and coherently, but the onus cannot be only on a subset of researchers if the whole field is to benefit. The rest of the organization research community must also work hard to judge these studies appropriately, and to leverage their findings usefully. I briefly outline three areas of practice through which the field as a whole can advance both grounded theory building and research more generally.

One area of practice that needs to be developed concerns framing research questions, and more generally articulating the purpose of the study. GTB does not ask whether or not, but rather examines how, when, and why. GTB therefore fits into the literature a bit "sideways," since theory testing work tends to emphasize theories by themselves, while GTB studies reflect how a number of theories and constructs might affect a phenomenon being studied. This uncomfortable fit prompts GTB researchers to be a bit vague about the purpose and point of the study. We must do a better job of clarifying the particular contribution of our research and of explaining crisply why that is important. However, the field needs to maintain a rich view of our subject (organizations), and keep the phenomena in our research framing. A dialogue about how to ask questions, how to connect issues, and how to approach real organizational problems would be a good start. As well, every study, regardless of approach, should be expected to articulate its contributions and limits for understanding actual practice (which may have little to do with the often rather vague "implications for managers" sections). Research that tests alternate theories against each other rather than against a null

hypothesis would strengthen our understanding of phenomena. Theory journals that contrast grounded theory building with deductive theory building, rather than exclude GTB because it is empirical, would advance the practice of theorizing significantly.

The second practice the field needs to develop more fully concerns data presentation and display. One of the major advantages of GTB is its sheer depth and breadth of analysis as an idea is literally run to the ground. However, demonstrating this depth and breadth is a real challenge, and any three grounded theory builders use three wildly distinct approaches. I have no particular solutions, except that some so-called "standards" do not fit all data or all purposes. One approach at the problem is to ask how can the more familiar data display approaches better convey the complexities of organizational life, and then try to build from there into the qualitative realm. Another approach is to ask consumers of research what they need to know in order to feel that the results are plausible, useful? These questions push us to articulate and debate openly what we need from all studies in order to make the complex judgments we actually make about them.

The third practice we need to work on is writing up studies. The linear, step-by-step presentation of the entire study – theory, data, results, or data, results, theory – seriously misrepresents how GTB actually occurs (principle 3, intertwined). However, presenting the study as it actually unfolded, in a complex spiraling over time among theory, data, questions, answers, and write-ups, can be very confusing. Some GTB writers put theory at the end as if it were inducted, even though they surely used some theory to frame the study. While other GTB writers properly go back and forth (Weick is a master), most of us cannot pull this off very well. The onus for making a case for a study is on the researcher. However, thoughtful dialogue and debate about how to present the whole study among writers and readers of all approaches would help to clarify expectations, sort out plausible options, and place responsibility more properly on the field as a whole.

Grounded theory building makes unique and important contributions to organizational analysis by providing a way to generate theories that really reflect how the subject of interest works in practice. Like any research, grounded theory building is systematic, is framed and ordered, draws on complex skills learned through experience, and is deeply informed by a social science discipline (for me, sociology, for others communication, social psychology, political science). One perhaps can achieve similar theoretical insight through abstracted and imaginative induction or deduction. But GTB provides a more systematic, and to me a more sensible, approach to building good organization theory.

References

Bailyn, L. (1977): "Research as a cognitive process: Implications for data analysis," *Quality and Quantity*, 11, 97–117.

Bailyn, L., and Lynch, J. (1983): "Engineering as a life-long career: Its meaning, its satisfactions, its difficulties," *Journal of Occupational Behaviour*, 4, 263–83.

Barley, S. (1996): "Technicians in the workplace: Ethnographic evidence for bringing work into organization studies," *Administrative Science Quarterly*, 41, 404–41.

Calas, M., and Smircich, L. (1996): "From 'the women's' point of view: Feminist approaches to organization studies," in S. Clegg, C. Hardy, and W. Nord (eds), *Handbook of Organization Studies*, London: Sage, 218–58.

Clark, K., and Fujimoto, T. (1991): *Product Development Performance*. Boston: Harvard Business School Press.

Cohen, M., and Levinthal, D. (1990): "Absorptive capacity: A new perspective on learning and innovation," *Administrative Science Quarterly*, 35, 128–52.

Czarniawska-Joerges, B. (1992): *Exploring Complex Organizations*. Newbury Park: Sage.

Denzin, N., and Lincoln, Y., (eds) (1998): *Collecting and Interpreting Qualitative Materials*. Thousand Oaks, CA.: Sage.

Dougherty, D. (1996): "Organizing for innovation," in S. Clegg, C. Hardy, and W. Nord (eds), *Handbook of Organization Studies*, London: Sage, 424–39.

Dougherty, D., and Heller, T. (1994): "The illegitimacy of successful product innovation in established firms," *Organization Science*, 5, 200–18.

Dougherty, D., and Kunda, G. (1990): "Photograph analysis: A method to capture organizational belief systems," in P. Gagliardi (ed.), *Symbols and Artifacts: Views of the Corporate Landscape*, Berlin: Walter de Gruyter, 185–206.

Dougherty, D., Borrelli, L., Munir, K., and O'Sullivan, A. (2000): "Systems of organizational sensemaking for sustained product innovation," *Journal of Engineering and Technology Management*, 17, 321–55.

Geertz, C. (1973): *The Interpretation of Cultures*. New York: Basic Books.

Giddens, A. (1971): *Capitalism and Modern Social Theory: An Analysis of the Writings of Marx, Durkheim, and Max Weber*. Cambridge: Cambridge University Press.

Giddens, A. (1979): *Central Problems in Social Theory*. Berkeley: University of California Press.

Glaser, B. (1992): *Basics of Grounded Theory Analysis*. Mill Valley, CA: Sociology Press.

Glaser, B., and Strauss, A. (1967): *The Discovery of Grounded Theory*. Chicago: Aldine.

Goffman, E. (1979): *Gender Advertisements*. New York: Harper Colophon Books.

Golden-Biddle, K., and Locke, K. (1997): *Composing Qualitative Research*. Thousand Oaks, CA: Sage.

Hinings, C. R., Brown, J., and Greenwood, R. (1991): "Change in an autonomous professional organization," *Journal of Management Studies*, 28(4), 375–93.

Hirsch, P. (1986): "From ambushes to golden parachutes: Corporate takeovers as an instance of cultural framing and institutional integration," *American Sociological Review*, 91, 800–37.

Jelinek, M., and Schoonhoven, C. B. (1990): *The Innovation Marathon: Lessons From High Technology Firms*. Oxford: Basil Blackwell.

Langley, A. (1999): "Strategies for theorizing from process data," *Academy of Management Review*, 24, 4, 691–710.

Latour, B. (1987): *Science in Action*. Cambridge, MA, Harvard University Press.

Lee, T., Mitchell, T., and Sablynski, C. (1999): "Qualitative research in organizational and vocational psychology, 1979–1999," *Journal of Vocational Behavior*, 55, 161–87.

Leonard-Barton, D. (1995): *Wellsprings of Knowledge*. Boston: Harvard Business School Press.

Mohr, L. (1982): *Explaining Organization Behavior*. San Francisco: Jossey-Bass.

Nord, W., and Tucker, S. (1987): *Implementing Routine and Radical Innovations*. Lexington, MA: Lexington Books.

Pentland, B. (1999): "Building process theory with narrative: From description to explanation," *Academy of Management Review*, 24, 4, 711–24.

Pentland, B., and Reuter, H. (1994): "Organizational routines and grammars of action," *Administrative Science Quarterly*, 39, 484–510.

Sahlins, M. (1985): *Islands of History*. Chicago, University of Chicago Press.

Suchman, L., and Trigg, R. (1993): "Artificial intelligence as craftwork," in S Cahiklin and J. Lave (eds), *Understanding Practice*, New York: Cambridge University Press, 144–78.

Strauss, A. (1987): *Qualitative Analysis for Social Scientists*. New York: Cambridge University Press.

Szulanski, G. (1996): "Exploring internal stickiness: Impediments to the transfer of best practice within the firm," *Strategic Management Journal*, 17, 27–43.

Van Maanen, J. (1979): "On the understanding of interpersonal relations," in W. Bennis, J. Van

Maanen, E. Schein, and F. Steele (eds), *Essays in Interpersonal Dynamics*, Homewood, IL: Dorsey Press.

Van Maanen, J. (1988): *Tales of the Field: On Writing Ethnography*. Chicago: University of Chicago Press.

Weber, M. (1947): *The Theory of Social and Economic Organization*, A. H. Henderson and T. Parsons (eds), with introduction by T. Parsons, New York: Free Press.

Weick, K. (1993): "The collapse of sensemaking in organizations: The Mann Gulch Disaster," *Administrative Science Quarterly*, 38(4), 628–52.

Weick, K. (1995): *Sensemaking in Organizations*. Thousand Oaks, CA: Sage.

Yang, E., and Dougherty, D. (1993): "Product innovation: More than just making a new product," *Creativity and Innovation Management*, 2, 137–55.