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# Grounded Theory Research: Procedures, Canons, and Evaluative Criteria

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*Using grounded theory as an example, this paper examines three methodological questions that are generally applicable to all qualitative methods. How should the usual scientific canons be reinterpreted for qualitative research? How should researchers report the procedures and canons used in their research? What evaluative criteria should be used in judging the research products? We propose that the criteria should be adapted to fit the procedures of the method. We demonstrate how this can be done for grounded theory and suggest criteria for evaluating studies following this approach. We argue that other qualitative researchers might be similarly specific about their procedures and evaluative criteria.*

## INTRODUCTION

In this paper[2] We address three related methodological issues. How should the usual scientific canons be redefined for qualitative research in social science? How should qualitative researchers report the procedures and canons used in their research? What evaluative criteria should be used in judging the products of particular studies? These products are not all identical in type because researchers variously aim at producing rich descriptions, ethnographic fact-finding accounts, narratives that yield verstehen, theoretical analyses of par-

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ticular phenomena, systematic theory, or politically intended consciousness-raising documents. Presumably, researchers who aim at such different goals will use at least somewhat different procedures. If so, we should not judge the results of their research by the same criteria.

We will try to illuminate these methodological issues by demonstrating how we have redefined the evaluation criteria in light of the procedures of grounded theory methodology. To do this we have first to explicate some of the procedural steps of grounded theory. We will conclude by offering a specific set of criteria for evaluating studies that follow the grounded theory approach. Our intent is to show how this can be done and to challenge other qualitative researchers to spell out their own procedures (Cf, Miles and Huberman, 1984; Manning, 1987) and evaluative criteria.

## Grounded Theory: Overview and Brief Description of Its Canons and Procedures

Qualitative methods, like their quantitative cousins, can be systematically evaluated only if their canons and procedures are made explicit. In this section, we describe the unions and procedures of grounded theory. (For a more detailed explanation see: Glaser & Strauss, 1967; Glaser, 1978; Strauss, 1987; Strauss & Corbin, forthcoming 1990). First, however, we shall briefly note an issue well recognized by qualitative researchers. Qualitative studies (and research proposals) are often judged by quantitatively-oriented readers; by many, though not all, the judgment is made in terms of quantitative canons. Some qualitative researchers maintain that those canons are inappropriate to their work (Cf., Agar, 1986; Guba, 1981; Kirk and Miller, 1986), and probably most believe that modifications are needed to fit qualitative research. Grounded theorists share a conviction with many other qualitative researchers that the usual canons of "good science" should be retained, but require *redefinition* in order to fit the realities of qualitative research and the complexities of social phenomena. These scientific canons include significance, theory-observation compatibility, generalizability, consistency, reproducibility, precision, and verification (Cf., the succinct discussion in Gortner and Schultz, 1988, p. 204). They are so much taken for granted by physical and biological scientists that even philosophers of science do not explicitly discuss most of them except for verification, though canons such as precision, consistency, and relevance are certainly implicit (Popper, 1959).

When using these terms, qualitative researchers must guard against the dangers that lie in their positivistic connotations. There is no reason to define or use them in accordance with the standards of quantitative social researchers, any more than one would strictly follow the usages of physical scientists. Every

mode of discovery develops its own standards—and canons and procedures for achieving them. What is important is that all of these are made explicit. Below we shall explicate how this has been done for grounded theory research.

## *Overview*

While grounded theory has not changed in form since it was first introduced in 1967, the specificity of its procedures has been elaborated in some detail as the method has evolved in practice. The procedures of grounded theory are designed to develop a well integrated set of concepts that provide a thorough theoretical explanation of social phenomena under study. A grounded theory should explain as well as describe. It may also implicitly give some degree of predictability, but only with regard to specific conditions.

Grounded theory derives its theoretical underpinnings from Pragmatism (Dewey, 1925; Mead, 1934) and Symbolic Interactionism (Park and Burgess, 1921; Thomas and Znaniecki, 1918; Hughes, 1971; Blumer, 1969). Though one need *not* subscribe to these philosophical and sociological orientations to use the method, two important principles drawn from them are built into it. The first principle pertains to change. Since phenomena are not conceived of as static but as continually changing in response to evolving conditions, an important component of the method is to build change, through process, into the method. The second principle pertains to a clear stand on the issue of "determinism." Strict determinism is rejected, as is nondeterminism. Actors are seen as having, though not always utilizing, the means of controlling their destinies by their responses to conditions. They are able to make choices according to their perceptions, which are often accurate, about the options they encounter. Both Pragmatism and Symbolic Interactionism share this stance. Thus, grounded theory seeks not only to uncover relevant conditions, but also to determine how the actors respond to changing conditions and to the consequences of their actions. It is the researcher's responsibility to catch this interplay. This interactive approach is necessary whether the focus of a study is microscopic, say of workers' interactions in a laboratory, or macroscopic, as in a study of the health industry or the AIDS policy arena.

As in other qualitative approaches, the data for a grounded theory can come from various sources. The data collection procedures involve interviews and observations as well as such other sources as government documents, video tapes, newspapers, letters, and books—anything that may shed light on questions under study. Each of these sources can be coded in the same way as interviews or observations (Glaser and Strauss, 1967, pp. 161-184). The investigator will use the usual methods suggested in the interview and field work literature to assure credibility of respondents and to avoid biasing their respon-

ses and observations (Guba, 1981; Hammersley and Atkinson, 1983; Kirk and Miller, 1986; Johnson, 1975). An investigator will also follow similar protective procedures for collecting and analyzing documentary data.

## *Canons and Procedures*

In writing a detailed account of grounded theory procedures and canons, we risk being read as unduly formalistic and perhaps as somewhat sectarian. Yet these procedures and canons must be taken seriously. Otherwise researchers end up claiming to have used a grounded theory approach when they have used only some of its procedures or have used them incorrectly. Each researcher must tread a fine line between satisfying the suggested criteria and allowing procedural flexibility in the face of the inevitable contingencies of an actual research project. However, to the extent that circumstances permit, following the procedures with care gives a project rigor.

Grounded theory has specific procedures for data collection and analysis, although there is flexibility and latitude within limits. (If one stretches the limits too far, rigor cannot be maintained.) Just as the grounded theory researcher must know these procedures and associated canons in order to carry out a study, so should those who read and evaluate grounded theory studies. The procedures and canons are as follows:

1. *Data Collection and Analysis are Interrelated Processes.* In grounded theory, the analysis begins as soon as the first bit of data is collected. By contrast, many qualitative researchers collect much of their data prior to beginning systematic analysis. While this may work for other modes of qualitative research, it violates the foundations of this method. Here, analysis is necessary from the start because it is used to direct the next interview and observations. This is not to say that data collection is not standardized. Each investigator enters the field with some questions or areas for observation, or will soon generate them. Data will be collected on these matters throughout the research endeavor, unless the questions prove, during analysis, to be irrelevant. In order *not* to miss anything that may be salient, however, the investigator must analyze the first bits of data for cues. All seemingly relevant issues must be incorporated into the next set of interviews and observations.

The carrying out of procedures of data collection and analysis systematically and sequentially enables the research process to capture all potentially relevant aspects of the topic as soon as they are perceived. This process is a major source of the effectiveness of the grounded theory approach. The research *process* itself guides the researcher toward examining all of the possibly rewarding avenues to understanding. This is why the research method is one of discovery and one which grounds a theory in reality (Glaser & Strauss, 1967).

Every concept brought into the study or discovered in the research process is at first considered provisional. Each concept earns its way into the theory by *repeatedly* being present in interviews, documents, and observations in one form or another—or by being significantly absent (i.e., it should be present, but isn't, so that questions must be asked). Requiring that a concept's relevance to an evolving theory (as a condition, action/interaction, or consequence) be demonstrated is one way that grounded theory helps to guard against researcher bias. No matter how enamored the investigator may be of a particular concept, if its relevance to the phenomenon under question is not proven through continued scrutiny, it must be discarded. Grounding concepts in the reality of data thus gives this method theory-observation congruence or compatibility.

2. *Concepts Are the Basic Units of Analysis.* A theorist works with conceptualizations of data, not the actual data per se. Theories can't be built with actual incidents or activities as observed or reported; that is, from "raw data." The incidents, events, and happenings are taken as, or analyzed as, potential indicators of phenomena, which are thereby given conceptual labels. If a respondent says to the researcher, "Each day I spread my activities over the morning, resting between shaving and bathing," then the researcher might label this phenomenon as "pacing." As the researcher encounters other incidents, and when after comparison to the first, they appear to resemble the same phenomena, then these, too, can be labeled as "pacing." Only by comparing incidents and naming like phenomena with the same term can a theorist accumulate the basic units for theory. In the grounded theory approach such concepts become more numerous and more abstract as the analysis continues.

3. *Categories Must Be Developed and Related.* Concepts that pertain to the same phenomenon may be grouped to form categories. Not all concepts become categories. Categories are higher in level and more abstract than the concepts they represent. They are generated through the same analytic process of making comparisons to highlight similarities and differences that is used to produce lower level concepts. Categories are the "cornerstones" of a developing theory. They provide the means by which a theory can be integrated.

We can show how the grouping of concepts forms categories by continuing with the example presented above. In addition to the concept of "pacing," the analyst might generate the concepts of "self-medicating," "resting," and "watching one's diet." While coding, the analyst may note that, although these concepts are different in form, they seem to represent activities directed toward a similar process: keeping an illness under control. They can be grouped under a more abstract heading, the category: "Self Strategies for Controlling Illness."

Merely grouping concepts under a more abstract heading does not constitute a category, however. To achieve that status (as explained more fully below) a more abstract concept must be developed in terms of its properties and dimensions of the phenomenon it represents, conditions which give rise to

it, the action/interaction by which it is expressed, and the consequences it produces. For example, once the category is identified, one would want to know some of the characteristics of self-strategies for managing illness: are they employed some of the time or all of the time? Do they require much knowledge or can one use them with little knowledge? One would also want to address such questions as: How do the strategies differ from those carried out by health practitioners and family members? Under what conditions does someone use self-strategies and when not? What other strategies for self-management do people use? What consequences follow from their usage?

Through such specification, categories are defined and given explanatory power. Over time, categories can become related to one another to form a theory.

4. *Sampling in Grounded Theory Proceeds on Theoretical Grounds.* Sampling in grounded theory proceeds not in terms of drawing samples of specific groups of individuals, units of time, and so on, but in terms of concepts, their properties, dimensions, and variations. When a project begins, the researcher brings to it some idea of the phenomenon he or she wants to study. Based on this knowledge, groups of individuals, an organization, or community representative of that phenomenon can be selected for study. For example, if a researcher wants to study nurses' work, he or she would go to where nurses are working—a hospital, clinic, or home (or all three)—to watch what they do.

Once there, the researcher would not be sampling nurses as such, but sampling the incidents, events, and happenings that denote the work that the nurses do, the conditions that facilitate, interrupt, or prevent their work, the action/interaction by which it is expressed, and the consequences that result. After analysis of the first observations the term "work" would have more specific and complex meanings than the general questions or concepts with which one began the study. The researcher might note that there are different types of work, that it varies in intensity, and so forth.

At this point, the researcher might want to pick up on differences among types of work, focusing his or her observations to identify as much variation in types as possible. At the same time, he or she might also be sampling for intensity, making note of conditions that create more or less intensity in the work. To maximize the potential for uncovering such conditions the researcher might also observe places where the work is known to be intense or less intense, such as intensive care units in contrast to home health care. This does not mean, however, that the researcher might not happen upon highly intensive work by chance, while simply moving among hospital units in a systematic fashion. The investigator could vary the time of sampling to determine if work seems more intense during some parts of the day than others. The idea is this: it is not nurses, units, or time that are the focus of attention, but rather the intensity of work or types of work. One varies or contrasts the conditions as

methodically as possible in order to determine what has an impact on the phenomenon in question.

To maintain consistency in data collection, the investigator should watch for indications of all important concepts in every observation—ones carried over from previous analyses as well as ones that emerge in the situation. All of the observations would be qualified by noting the conditions under which the phenomena occur, the action/interactional form they take, the consequences that result, and so forth. Careful noting of qualifiers gives specificity to concepts.

Though one does not normally count the times that one observes or reads about an event or action as indicative of a concept, this can be done. Simply to sit and count may keep the researcher from noticing previously unidentified events that might prove more important for the evolving theory. However, it is possible to count specific events later from systematic field notes if it seems useful for the overall qualitative analysis. (For an example, see Barley, 1986.)

It is by theoretical sampling that representativeness and consistency are achieved. In grounded theory, representativeness of concepts, not of persons, is crucial. The aim is ultimately to build a theoretical explanation by specifying phenomena in terms of conditions that give rise to them, how they are expressed through action/interaction, the consequences that result from them, and variations of these qualifiers. The aim is not to generalize findings to a broader population per se. For instance, one might want to know how representative "comfort work" is of the total amount of work that nurses do (Strauss, et al., 1985, pp. 99-128). Do nurses engage in it all of the time or some of the time? What are the conditions that enable them to do it or prevent their doing it? It is also necessary to situate one type of work in relationship to other types. If comfort work is a predominant type of work among nurses, it will emerge as such. If rarely seen, this fact will be noted along with the conditions describing why comfort work is not. Consistency is achieved because, once a concept has "earned" its way into a study through demonstrations of its relationship to the phenomenon under investigation, then its indicators should be sought in all subsequent interviews and observations. How consistently is it found? Under what conditions is it found?

5. *Analysis Makes Use of Constant Comparisons.* As an incident is noted, it should be compared against other incidents for similarities and differences. The resulting concepts are labeled as such, and over time, they are compared and grouped as previously described. Making comparisons assists the researcher in guarding against bias, for he or she is then challenging concepts with fresh data. Such comparisons also help to achieve greater precision (the grouping of like and only like phenomena) and consistency (always grouping like with like). Precision is increased when comparison leads to sub-division of an original concept, resulting in two different concepts or variations on the first.

6. *Patterns and Variations Must Be Accounted For.* The data must be examined for regularity and for an understanding of where that regularity is not apparent. Suppose an investigator notices that nurses regularly engage in sentimental work (Strauss, et al., 1985) when pediatric patients undergo physically traumatic experiences. If, however, the researcher also notes that when nurses are especially busy, they delegate the sentimental work to another member of the health team or a family member, a variation of the original pattern emerges. Finding patterns or regularities helps to give order to the data and assist with integration.

7. *Process Must Be Built Into the Theory.* In grounded theory, process has several meanings. Process analysis can mean breaking a phenomenon down into stages, phases, or steps. Process may also denote purposeful action/interaction that is not necessarily progressive, but changes in response to prevailing conditions. One may speak of a division of labor among factory workers as a flexible process depending upon the situation. Each worker is assigned certain duties and responsibilities, but they may be temporarily set aside or altered if another worker is injured or needs assistance with priority work. "Being flexible" offers one explanation of how work gets done despite daily fluctuations in staffing and work loads. Noting how the division of labor shifts and changes in response to prevailing conditions over the course of a day, week, or year is another way of bringing process into the analysis.

8. *Writing Theoretical Memos Is an Integral Part of Doing Grounded Theory.* Since the analyst cannot readily keep track of all the categories, properties, hypotheses, and generative questions that evolve from the analytical process, there must be a system for doing so. The use of memos constitutes such a system. Memos are not simply about "ideas." They are involved in the formulation and revision of theory during the research process. Writing memos should begin with the first coding sessions and continues to the end of the research. It should incorporate and elaborate on the coding sessions themselves as well as on the "code notes." (See Strauss, 1987, pp. 59-69 for illustrations of code notes.)

Memos vary in form and length according to the stage of the research project and the type of coding one is performing. As a theory becomes better elaborated and integrated, so do the memos. Memo writing should continue until the very end of the project, often including the writing itself. Sorted and resorted during the writing process, theoretical memos provide a firm base for reporting on the research and its implications. If a researcher omits the memoing and moves directly from coding to writing, a great deal of conceptual detail is lost or left undeveloped. A less well elaborated and satisfying integration of the analysis will result. (For other functions and features of memos, including illustrations and comments about different types, see Glaser, 1978, pp. 82-91, and Strauss, 1987, pp. 109-129.) Though theoretical memo- and code note-writ-

ing procedures are specific to grounded theory, the recording of fieldnote and interview data is not appreciably different from the techniques used by other qualitative researchers.

9. *Hypotheses About Relationships among Categories Should Be Developed and Verified as Much as Possible during the Research Process.* As hypotheses about relationships among categories are developed, they should be taken back into the field for checking out and revision as needed. (This process is explained more fully under "axial coding.") A key feature of grounded theory is not that hypotheses remain unverified, but that hypotheses (whether involving qualitative or quantitative data) are constantly revised during the research until they hold true for all of the evidence concerning the phenomena under study, as gathered in repeated interviews, observations or documents.

Embedded in the verification procedures is a search for negative and qualifying evidence. Because it entails constant revisions, this process results in quite robust analyses (Wimsatt, 1981). In *The Discovery of Grounded Theory*, emphasis on "verification" was perhaps too much identified with kinds of research that we opposed. Many readers of that early book have apparently formed an image of grounded theory research as not at all concerned with verification.

10. *A Grounded Theorist Need Not Work Alone.* For many who use the grounded theory approach, an important part of research is testing concepts and their relationships with colleagues who have experience in the same substantive area. Opening up one's analysis to the scrutiny of others helps guard against bias. Discussions with other researchers often lead to new insights and increased theoretical sensitivity as well. Research projects carried out by teams also offer opportunities for increasing the probability of collaborative analysis (Strauss, 1987, pp. 138-139). Where several researchers live or work in proximity, occasional or on-going discussion groups provide an excellent supportive resource.

11. *Broader Structural Conditions Must Be Analyzed, However Microscopic the Research.* The analysis of a setting must not be restricted to the conditions that bear immediately on the phenomenon of central interest. Broader conditions affecting the phenomenon may include economic conditions, cultural values, political trends, social movements, and so on. We have suggested elsewhere (Corbin & Strauss, 1988, pp. 135-138; Strauss & Corbin, 1989) that it is useful to think of structural conditions in terms of a "Conditional Matrix." With this image, we suggest the worth of attending to a set of decreasingly inclusive circles embracing different conditions, beginning with the broad ones just noted and moving inward to conditions progressively narrower in scope.

Bringing broader conditions into the analysis requires integrating them into the theory. It is not appropriate simply to list them or refer to them as a background for "better understanding" of what one is studying. It is the researcher's responsibility to show *specific* linkages between conditions, actions,

and consequences. We should not simply note, for example, that the increased specialization among physicians, nurses, and technicians has affected the organization and performance of work in intensive care nurseries. Rather, we must specify how particular features of increased specialization link with the organization and performance of work to produce the resulting consequences (Strauss & Corbin, forthcoming 1990).

## *Coding*

Coding is the fundamental analytic process used by the researcher. In grounded theory research, there are three basic types of coding: open, axial, and selective.

1. *Open Coding.* Open coding is the interpretive process by which data are broken down analytically. Its purpose is to give the analyst new insights by breaking through standard ways of thinking about or interpreting phenomena reflected in the data. (See Wicker, 1985 on "breaking out of conceptual ruts.") A series of techniques have been developed to further this process.

In open coding, events/actions/interactions are compared with others for similarities and differences. They are also given conceptual labels. In this way, conceptually similar events/actions/interactions are grouped together to form categories and subcategories. For example, an analyst might note several incidents, actions, and interactions between nurse and client which appear to be directed at providing comfort. The analyst labels these as "comfort work." This category can then be broken down into specific properties and their dimensions. "Comfort work" has the property of type, which can be broken down into subtypes. Another property is duration, which can be dimensionalized as ranging from long to short episodes. Still another property is the manner in which comfort work is carried out, and so forth. Specification thus develops categories while also furthering the precision of a grounded theory.

Once identified, categories and their properties become the basis for sampling on theoretical grounds. In making the next observations, the researcher should look closely for instances of comfort work and take specific note of the different kinds, how long they last, and so forth.

Open coding stimulates generative and comparative questions to guide the researcher upon return to the field: What is comfort work and how does it manifest itself? How does it differ from other types of work that nurses do, safety work, for example? Asking such questions enables the researcher to be sensitive to new issues and more likely to take notice of their empirical implications (theoretical sensitivity), while comparisons help to give each category specificity. Once aware of distinctions among categories, the researcher can

spell out specific properties and dimensions of each. Ambiguities can be resolved through additional field work and specification.

Open coding and the use it makes of questioning and constant comparisons enables investigators to break through subjectivity and bias. Fracturing the data forces preconceived notions and ideas to be examined against the data themselves. A researcher may inadvertently place data in a category where they do not analytically belong, but by means of systematic comparisons, the errors will eventually be located and the data and concepts arranged in appropriate classifications.

2. *Axial Coding.* In axial coding, categories are related to their subcategories, and the relationships tested against data. Also, further development of categories takes place and one continues to look for indications of them. Through the "coding paradigm" of conditions, context, strategies (action/interaction), and consequences, subcategories are related to a category. This paradigm does not differ from schemes used in other types of qualitative research, but perhaps is used more concertedly in grounded theory studies. To continue with our example of "comfort work," as soon as the analyst notes an indication of this type of work, the data should be scrutinized to determine the conditions that gave rise to the work, the context in which it was carried out, the action/interactions through which it occurred, and its consequences. If one does not alternately collect and analyze data, there will be gaps in the theory, because analysis does direct what one focuses upon during interviews and observations.

During the analytic process, the analyst can draw upon previous experience to think through the conditions that might lead a nurse to perform comfort work and what the consequences for the patient might be. All hypothetical relationships proposed deductively during axial coding must be considered provisional until verified repeatedly against incoming data. Deductively arrived at hypotheses that do not hold up when compared with actual data must be revised or discarded.

A single incident is not a sufficient basis to discard or verify a hypothesis. To be verified (that is, regarded as increasingly plausible) a hypothesis must be indicated by the data over and over again. An unsupported hypothesis must be critically evaluated to determine if it is false or if the observed events indicate a variation of the hypothesis (different conditions, indicating a different form). A major strategy in grounded theory is to seek systematically the full range of variation in the phenomena under scrutiny. "Researchers too often buy a falsification mode of thinking, which blinds them to the issue of variation and conditions." (David Maines, personal communication.)

Let us again turn to an example for clarification. Suppose the analyst conceived the following hypothesis: when cancer patients complain of pain and request relief, nurses provide comfort not only by giving them pain medication,

but also through touch, soothing talk, and so on. If in another observation, however, a cancer patient complains of pain, yet the nurse does *not* respond in the expected manner, the hypothesis is not necessarily false. The researcher should investigate why the nurse did not respond as predicted. The incident may suggest a variation of the original hypothesis, which can then be revised to include various new, provisional, conditional relationships. Doing so makes the theory conceptually denser, and makes the conceptual linkages more specific. The analyst can say: "Under these conditions, action takes this form, whereas under these other conditions, it takes another.

3. *Selective Coding.* Selective coding is the process by which *all* categories are unified around a "core" category, and categories that need further explication are filled-in with descriptive detail. This type of coding is likely to occur in the later phases of a study.

The core category represents the central phenomenon of the study. It is identified by asking questions such as: What is the main analytic idea presented in this research? If my findings are to be conceptualized in a few sentences, what do I say? What does all the action/interaction seem to be about? How can I explain the variation that I see between and among the categories? The core category might emerge from among the categories already identified or a more abstract term may be needed to explain the main phenomenon. The other categories will always stand in relationship to the core category as conditions, action/interactional strategies, or consequences. Diagramming can assist in integration of categories.

Poorly developed categories are most likely to be identified during selective coding. A poorly developed category is one for which few properties have been uncovered in the data or for which a subcategory contains only a few explanatory concepts. In order for a theory to have explanatory power, each of its categories and subcategories must have conceptual density. When this is lacking, the analyst can return to the field, or to fieldnotes to obtain data that will allow gaps in the theory to be filled.

In some grounded theory studies, researchers have had difficulty making a commitment to a core category. As one astute reader (Adele Clarke) of a draft of this paper wrote, " . . . at this stage one can commonly confront several [analytical] schemes that can link it all together. Then one must choose among them that which best captures the whole shebang." Her question was: how does one do this? How does one compare "robustness in the face of alternatives"? The conventional answer has been that sufficient coding will eventually lead to a clear perception of which category or conceptual label integrates the entire analysis. Sometimes this does not take place, however, even for experienced researchers. Then, the investigators have to struggle with the problem of integra-

tion, playing one analytic scheme against the other to see which captures the essence of what the research is all about. There are techniques for advancing this process (Glaser, 1978; Strauss, 1987; Strauss and Corbin, forthcoming 1990.)

The generalizability of a grounded theory is partly achieved through a process of abstraction that takes place over the entire course of the research. The more abstract the concepts, especially the core category, the wider the theory's applicability. At the same time, a grounded theory specifies the conditions under which a phenomenon has been discovered in this particular data. A range of the situations to which it applies or has reference is thereby specified. In utilizing theory, practitioners or others may encounter somewhat different or not-quite-the-same situations, but still wish to guide their actions by it. They must discover the extent to which the theory does apply and where it has to be qualified for the new situations.

A grounded theory is reproducible in the limited sense that it is verifiable. One can take the propositions that are made explicit or left implicit, whatever the case may be, and test them. However, no theory that deals with social psychological phenomena is actually reproducible in the sense that new situations can be found whose conditions *exactly* match those of the original study, although major conditions may be similar. Unlike physical phenomena, it is very difficult in the social realm to set up experimental or other designs in which one can recreate all of the original conditions and control all extraneous variables impinging upon the phenomenon under investigation. When testing hypotheses derived from a grounded theory, the investigator should specify the test conditions carefully and adjust the theory to fit them, assuming they cannot match the conditions originally specified. The more abstract the concepts, and the more variation uncovered in the original study, the more likely it is that the propositions apply to a broad range of situations.

Another way of explaining reproducibility is as follows: Given the theoretical perspective of the original researcher and following the same general rules for data collection and analysis, plus similar conditions, another investigator should be able to arrive at the same general scheme. The discrepancies that arise should be resolvable through re-examining the data and identifying special conditions operating in each case.

A grounded theory is generalizable insofar as it specifies conditions that are linked through action/interaction with definite consequences. The more systematic and widespread the theoretical sampling, the more completely the conditions and variations will be discovered, permitting greater generalizability, precision, and predictive capacity. If the original theory fails to account for variation uncovered through additional research, the new specifications can be used to amend the original formulation.

## Criteria for Evaluating a Grounded Theory

The success of a research project is judged by its products. Except where results are only presented orally, the study design and methods, findings, theoretical formulations, and conclusions are judged through publication. Yet, how are writings to be evaluated and by what criteria? As noted at the outset of this paper, different modes of research require different methods and criteria of evaluation. When judging qualitative research, it is not appropriate to apply criteria ordinarily used to judge quantitative studies. One aim of this paper has been to show that the grounded theory approach accepts the usual scientific canons, but redefines them carefully to fit its specific procedures. For any grounded theory study, the specific procedures and canons described above should provide the major basis of evaluation.

It is important to recognize that in judging a research publication that claims to generate, elaborate, or "test" a theory, the reader should distinguish four issues. First, judgments should be made about the *validity, reliability, and credibility* of the data (Le Compte and Goetz, 1982; Guba, 1981; Kidder, 1981; Kirk and Miller, 1985; Miles and Huberman, 1984; Sandelowski, 1986). Second, judgments should be made about the *plausibility and value* of the theory itself or, if the publication is less ambitious, then of its modest theoretical formulations. Third, judgments should be made about the *adequacy* of the research process which generated, elaborated, or tested the theory. Fourth, judgments should be made about the *empirical* grounding of the research findings.

We shall not address the criteria for judging either data or theories. The first have been much discussed in the literature. Nor shall we offer criteria for judging the plausibility and value of theories, a matter that belongs better in the province of philosophers of science. To the degree that a grounded theory publication provides information bearing on the criteria for assessing its data, research process and empirical grounding, however, its readers can evaluate its plausibility and value. It is the latter issues that need discussion here—the assessment of the adequacy of the research proces and the grounding of the research findings. We hope to offer evaluative guidance to readers of grounded theory publications and suggest more systematic guidelines to authors themselves. Our description may also stimulate researchers in other qualitative traditions to specify and publish criteria for judging their own research processes and grounding their empirical findings.

## The Research Process

A grounded theory publication should help the reader to assess some of the components of the actual research process on which it reports. However,

even in a monograph—which, after all, consists primarily of theoretical formulations and analyzed data—there may be no way that readers can accurately judge *how* the researcher carried out the analysis. The readers are not present during the actual analytic sessions, and the monograph does not necessarily help them to imagine these sessions or their sequence. To remedy this, it would be useful for readers to be given information bearing on the criteria given below. The detail need not be great even in a monograph. But it should provide some reasonably good grounds for judging the adequacy of the research process. The kinds of information needed are indicated in these questions:

*Criterion #1*: How was the original sample selected? On what grounds (selective sampling)?

*Criterion #2*: What major categories emerged?

*Criterion #3*. What were some of the events, incidents, actions, and so on that indicated some of these major categories?

*Criterion #4*. On the basis of what categories did theoretical sampling proceed? That is, how did theoretical formulations guide some of the data collection? After the theoretical sample was carried out, how representative did these categories prove to be?

*Criterion #5*: What were some of the hypotheses pertaining to relations among categories? On what grounds were they formulated and tested?

*Criterion #6*: Were there instances when hypotheses did not hold up against what was actually seen? How were the discrepancies accounted for? How did they affect the hypotheses?

*Criterion #7*: How and why was the core category selected? Was the selection sudden or gradual, difficult or easy? On what grounds were the final analytic decisions made? How did extensive "explanatory power" in relation to the phenomena under study and "relevance" as discussed earlier figure in the decisions?

Some of these criteria are unconventional (for instance, emphasizing theoretical rather than statistical sampling and the injunction to account for discrepancies explicitly) for most quantitative and many qualitative researchers. Yet, these standards are essential to evaluating grounded theory studies. If a grounded theory researcher provides the pertinent information, they enable readers to assess the adequacy of a complex coding procedure. Detail reported in this way and supplemented with appropriate cues can, at least in longer publications, highlight thorough tracking of indicators, conscientious and imaginative theoretical sampling, and so on.

### *Empirical Grounding of Findings*

*Criterion #1*: Are concepts generated?

Since the basic building blocks of any scientific theory is a set of concepts grounded in the data, the first questions to be asked of any grounded theory publication are: Does it generate (via coding-categorizing activity) or at least use concepts? And what are their sources? If concepts are drawn from common usage (such as, "uncertainty") but are not put to technical use, they are not parts of a grounded theory, for they are not actually grounded in the data themselves. Any monograph that purports to present theoretical interpretations of data based on grounded theory analysis should permit a quick, if crude, assessment of concepts merely by a check of the index to determine whether the listed concepts seem to be technical or common sense ones, and whether there are many of them. For a more complete assessment of such points, one must at least scan the book.

*Criterion #2*: Are the concepts systematically related?

The key to scientific research is systematic conceptualization through explicit conceptual linkages. So a grounded theory publication must be asked: Have such linkages been made? Do they seem to be grounded in the data? Are the linkages systematically developed? As in other qualitative writing, the linkages are unlikely to be presented as a list of hypotheses, set of propositions, or other formal terms, but be woven throughout the text of the publication.

*Criterion #3*: Are there many conceptual linkages and are the categories well developed? Do the categories have conceptual density?

If only a few conceptual relationships are specified, even if they are grounded and identified systematically, there is something to be desired in terms of the overall grounding of the theory. In final integration, a grounded theory should tightly relate categories to one another and subcategories in terms of the basic paradigm features—conditions, context, actions/interactions (including strategies) and consequences. Categories should also be theoretically dense, having many properties richly dimensionalized. It is tight linkages, in terms of paradigm features and density of categories, that give a theory explanatory power. Without them a theory is less than satisfactory.

*Criterion #4*: Is there much variation built into the theory?

Some qualitative studies report on a single phenomenon, establish only a few conditions under which it appears, specify only a few actions/interactions that characterize it, and address a limited number or range of consequences. By contrast, a grounded theory monograph should be judged in terms of the range of variations *and* the specificity with which they are analyzed in relation to the phenomena that are their source. In a published paper, the range of variations discussed may be more limited, but the author should at least suggest that a larger study includes their specification.

*Criterion #5*: Are the broader conditions that affect the phenomenon under study built into its explanation?

The grounded theory mode of research requires that the conditions noted in explanatory analysis should not be restricted to ones that bear immediately on the phenomenon under study. The analysis should not be so "microscopic" as to disregard conditions that derive from more "macroscopic" sources, such as economic conditions, social movements, cultural values, and so forth.

Macrosocial conditions must not simply be listed as background material but linked directly to the phenomena under study through their effect on action/interaction and, through these, to consequences. Any grounded theory publication that omits the broader conditions or fails to explicate their specific connections to the phenomena under investigation falls short in empirical grounding.

*Criterion #6*: Has "process" been taken into account?

Identifying and specifying change or movement in the form of process is important to grounded theory research. Any change must be linked to the conditions that gave rise to it. Process may be described in terms of stages or phases and as fluidity or movement of action/interaction over time in response to prevailing conditions.

*Criterion #7*: Do the theoretical findings seem significant and to what extent?

It is entirely possible to complete a grounded theory study, or any study, yet not produce findings that are significant. The question of significance is generally viewed in terms of a theory's relative importance for stimulating further studies and explaining a range of phenomena. We have in mind, however, assessing a study's empirical grounding in relation to its actual analysis insofar as this combination of activities produces useful theoretical findings. If the researcher simply follows the grounded theory procedures/canons without imagination or insight into what the data are reflecting—because he or she fails to see *what* they really indicate except in terms of trivial or well known phenomena—then the published findings fail on this criterion. Because there is an interplay between researcher and data, no method, certainly not grounded theory, can ensure that the interplay will be creative. Creativity depends on the researcher's analytic ability, theoretical sensitivity, and sensitivity to the subtleties of the action/interaction (plus the ability to convey the findings in writing). A creative interplay also depends on the other pole of the researcher-data equation, the quality of data collected or utilized. An unimaginative analysis may in a technical sense be adequately grounded in the data, yet be insufficiently grounded for the researcher's theoretical purposes. This occurs if the researcher does not draw on the complete resources of data or fails to push data collection far enough.

This double set of criteria—for the research process and for the empirical grounding of theoretical findings—bears directly on the issues of how fully verified any given grounded theory study is and how this is to be ascertained.

When a study is published, if key components of the research process are clearly laid out and if sufficient cues are provided, then the theory or theoretical formulations can be assessed in terms of degrees of plausibility. We can judge under what conditions the theory might fit with "reality," convey understanding, and prove useful in practical and theoretical terms.

## CONCLUSION

Two last comments about evaluative criteria may be useful. First, the criteria should not be regarded as hard and fast evaluative rules, either for researchers or for readers who are judging the publications of others. They are intended as guidelines. New areas of investigation may require that procedures and evaluative criteria be modified to fit the circumstances of the research. Imaginative researchers who are wrestling with unusual or creative use of materials will, at times, depart somewhat from "authoritative" guidelines for procedures. Having said this, we *strongly* urge grounded theory investigators to adhere to its major criteria unless there are exceptional reasons for not doing so. In such unusual cases, researchers should know precisely how and why they depart from the criteria, say so in their writing, and submit the credibility of their findings to the reader.

Second, we suggest that researchers using grounded theory procedures should discuss their procedural operations, even if briefly, especially in longer publications. They should include a listing of any special procedural steps taken in addition to the ones discussed in this paper. Readers are then in a better position to judge the overall adequacy of the research. It would also make readers more aware of how this particular research differs from research employing other modes of qualitative research. Researchers themselves would become more aware of what their operations have been and of possible inadequacies of their operations. In other words, they would be able to identify and convey the limitations of their studies.

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