Handwerker, P., and S. P. Borgatti. 1998. Reasoning with numbers. In *Handbook of methods in cultural anthropology*, edited by H. R. Bernard, 549–93. Walnut Creek, CA: AltaMira.

Hyatt, S. B., with D. D. Caulkins. 1992. *"Putting bread on the table": The women's work of community activism.* Occasional Paper No. 6. Bradford: University of Bradford Department of Social and Economic Studies.

Johnson, J. C. 1990. *Selecting ethnographic informants. Qualitative research methods 22.* Newbury Park, CA: Sage.

Leonard, A. 1991. Women in struggle: A case study in a Kent mining community. In *Working women: International perspectives on labour and gender ideology*, edited by N. Redclift and M. T. Sinclair, 125–48. London: Routledge.

Romney, A. K. 1994. Cultural knowledge and cognitive structure. In *The making of psychological anthropology, Vol. II*, edited by M. Suárez-Orozco, G. Spindler, and L. Spindler, 254–83. New York: Harcourt Brace.

Romney, A. K., W. H. Batchelder, and S. C. Weller. 1987. Recent applications of cultural consensus theory. *American Behavioral Scientist* 31(2): 163–77.

Romney, A. K., and S. C. Weller. 1984. Predicting informant accuracy from patterns of recall among individuals. *Social Networks* 6:59–77.

Romney, A. K., S. Weller, and W. H. Batchelder. 1986. Culture as consensus: A theory of culture and informant accuracy. *American Anthropologist* 88(2): 313–38.

Spradley, J. P. 1979. *The ethnographic interview.* New York: Holt, Rinehart & Winston.

Weller, S. C., and A. K. Romney. 1988. *Systematic data collection.* Newbury Park, CA: Sage.

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A Systems Approach to Qualitative Data Management and Analysis

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The basic components of qualitative data analysis are systematically organized and described. The authors propose a system centered on a database architecture with four elements that correspond to the fundamental types of information collected in the research process: (1) characteristics of the sources where answers to research questions are sought, (2) primary information collected from the sources, (3) secondary information generated to assist in the interpretation of the primary information, and (4) characteristics of the coders who generate the secondary information. The authors describe a process for constructing each of the four database elements, including criteria for inclusion of data in each element. The proposed system supports the use of quantitative and qualitative approaches to evaluate qualitative coding schemes, to assess intra- and intercoder agreement, to recognize meaningful patterns in qualitative data, and to describe the underlying symbolic and sociocultural systems reflected in the data objects.

In this article, we outline a systematic approach to qualitative data management that emphasizes the distinctions among and relationships between the types of data generated during qualitative research. The model can be a guide for the coordination of data collection, management, and analysis tasks. It also can serve as a framework to assess strengths, weaknesses, and biases within a database by making the content explicit. This model forms the foundation for a new Centers for Disease Control and Prevention (CDC)–sponsored public domain software program called AnSWR: Analysis Software for Word-Based Records.[1] Both the model and AnSWR are currently being used for data management and analysis for a large, complex, multisite CDC-

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sponsored study called Project LinCS: Linking Communities and Scientists (MacQueen and Trotter 1997). Project LinCS has generated 313 interviews and more than 10,000 pages of transcribed text from 238 participants on a range of topics related to community and scientific perceptions of HIV vaccine trials in the United States (Hays et al. 1998; Kegeles et al. 1998; MacQueen, Blanchard, et al. 1998).

BACKGROUND

In 1985, when qualitative research was still largely a cut-and-paste carbon-copy endeavor, Levine (1985) proposed a set of principles of data storage and retrieval. Citing the volume of data typically produced by a qualitative researcher, he described the challenge of managing "hundreds of pages of field notes" and remarked that the situation could be further exacerbated by the involvement of "multiple investigators at diverse sites" (p. 170). Levine argued that without a systematic approach to the management of such volumes of data, qualitative researchers were prone to make shortsighted decisions that could limit data retrieval and analysis later on.

Since then, computer technology has made it possible to store, retrieve, sort, and analyze ever-expanding amounts of information. But much of this technology is geared toward quantitative data management or toward business applications that lack a research orientation. As a result, qualitative research is increasingly burdened by tedious data management tasks that continue to limit analysis options. For example, imagine a qualitative study for which 150 in-depth interviews are audiotaped. Each interview is transcribed and saved as an individual word-processing file, with a backup copy stored separately. The word-processing files probably need to be specially formatted to meet the import requirements of a text analysis software package; if more than one analysis package is used, multiple copies of the files in different formats may need to be made. If an analysis package has memory limitations, the interview files may need to be broken into smaller files before they can be analyzed. The 150 interviews can easily turn into 300 or more computer files.

Each file must be securely stored to avoid corruption or loss. For efficient identification and retrieval, the file must be labeled and tracked through the use of logical file-naming protocols (often limited to eight characters) and hierarchical file directory structures. Information on file names and directory paths must then be tracked. With several hundred files to manage, this will probably require the creation of a database that includes other descriptive information on the interview files, such as when an interview was conducted,

who did the transcription, who checked the transcription, and whether there were any problems or anomalies.

Sociodemographic information on the 150 study participants will probably be entered in a quantitative database so that descriptive statistics can be produced. These participant characteristics also constitute an important part of the qualitative analysis. However, text analysis packages rarely allow for direct links between a quantitative database and the text data. As a result, the sociodemographic data must be (1) replicated in the text data, (2) manually coded via the text analysis package to associate it with the text, or (3) used to manually batch text files according to participant characteristics, with each batch then submitted to the same text analysis procedures so the results can be compared.

Depending on the capabilities of the text analysis package, extensive new information may be generated in the form of codes, code definitions, code relationships, code-text relationships, hypertext linkages, and conceptual maps. However, this information can rarely be accessed directly or exported from one package and then imported by another. Attempts to balance the strengths and weaknesses of multiple programs thus requires redundant text analysis.

Each step requires documentation of procedures and careful double-checking to ensure consistency across data components. For example, identification links must be consistent among the interview files, the interview tracking database, the sociodemographic database, and the analytic output. Seemingly small errors early in the process can snowball into major problems that require considerable time and effort to locate, undo, and then redo correctly. The end result is lost productivity, difficulties in maintaining error-free analyses, and a damaging inability to accomplish reasonable research objectives in a timely fashion. Although these issues are most challenging for large, complex studies, they also can transform small, targeted studies into frustrating quagmires that encourage overly simplistic analyses simply to get the job finished.

Standardization and simplification of basic data management tasks are clearly needed to support analytic progress in qualitative research. Kelle (1997) has pointed out that current debates over the role of computers in qualitative research "often fail to 'rationally reconstruct' actual processes of data management and data analysis." Kelle noted the tendency of software developers to "present straightforward techniques of data management as groundbreaking methodological innovations" (section 6.3). As we described, data management ranges from obvious tasks, such as tracking text files, to more subtle tasks, such as tracking the textual and interpretative evidence used to build a theory. Lee and Fielding (1996) noted that without the latter capability, "the tendency of hypertext to blur distinctions between 'data,' 'analysis,' 'interpretation,' and so on may for some be simply a recipe for

confusion and indecision produced by a maze of links and connections going nowhere in particular." The importance of trying to distinguish what you observe and what you think about what is observed also was recognized by Spradley (1979), who warned against "the temptation . . . to create order out of other cultures by imposing your own categories" (pp. 102–103) and labeled such efforts shallow domain analysis.

Data management is a black box in virtually all qualitative software, hidden from view and difficult to access. Programs differ in the specific elements in the underlying database (the design), the way these elements are configured (the architecture), the mechanics of how the user works with the database on-screen (the graphical user interface [GUI]), and the extent to which the database elements can be separated from the software program with their linkages intact (the export capability). By focusing on the data elements that are commonly found in a wide range of qualitative approaches, we hope to encourage the development of common protocols for importing and exporting data between software programs. With a common foundation, qualitative researchers could work with multiple programs without penalty. To this mundane yet critical end, we propose a systems approach centered on a database whose elements correspond to the fundamental types of information associated with qualitative research and the processes driving the generation of that information.

UNDERLYING PRINCIPLES

We emphasize an object-oriented definition of data. Data have traditionally been viewed as numbers or text that symbolically describe the real world. We preserve the emphasis on symbolism but expand it to include any digital representation, including photographs, graphic displays, video, sound, text, and numeric data. We refer to these representations as objects. All of these data objects are, of course, artifacts created by people. Some of them are created specifically to describe or explain other objects in the database (the who, what, where, why, and how of the objects). A well-organized qualitative database should make it easy for the analyst to know the particulars surrounding each object within it. It should also support linkage among all of the objects at all stages of analysis, and it should facilitate the development of analytic techniques that emphasize the discovery of patterns and relationships among whole objects, in addition to those that describe the basic components that make up each object.

Our system is designed to support scientific inquiry. This means that it supports systematic data collection and analysis, including the development

of standards for assessing the reliability and validity of the data. Criteria for inclusion in each data element ensure that all data can be evaluated in terms of their source and analytic function. By emphasizing the relationships among elements as well as the characteristics of the elements themselves, our system aims to support the application of both complexity-based[2] and statistical methods to evaluate data coding strategies, assess intra- and intercoder agreement, identify meaningful patterns in data, and describe symbolic or sociocultural systems.

A SYSTEMS APPROACH TO QUALITATIVE DATA MANAGEMENT

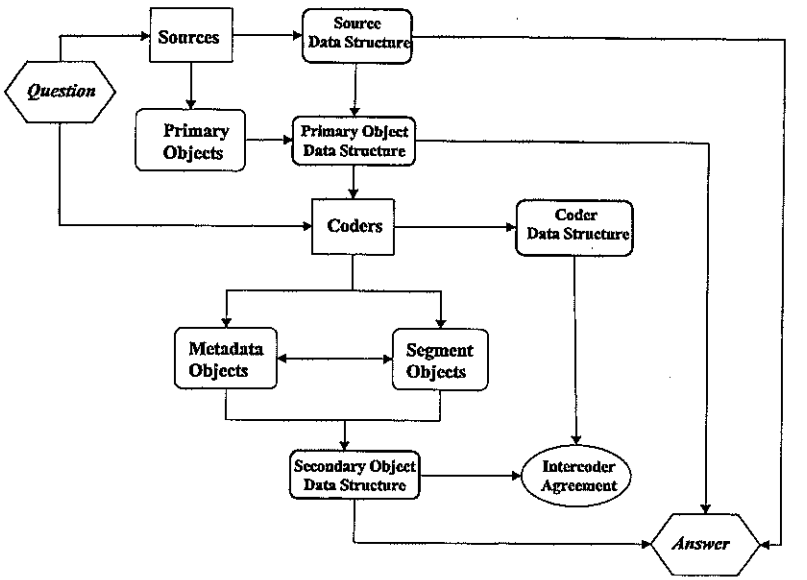
The approach we have developed tracks the analysis process from the formulation of a defined research question to an empirical, evidence-based answer to that question. Once a question is framed, a strategy for obtaining information to answer the question is developed. The information is collected and analyzed, sometimes iteratively. There are four fundamental types of information that contribute to the construction of an answer: (1) characteristics of the sources where information is sought, (2) primary information or objects collected from the sources, (3) secondary information or objects created to aid in the interpretation of primary objects, and (4) characteristics of the coders who construct the secondary objects.[3]

Ideally, a qualitative database should include structures to manage the information associated with each of these four basic components (i.e., a source data structure, a primary object data structure, a secondary object data structure, and a coder data structure). We use the term "structure" because a single component may require more than one data table or data set to effectively manage all of the relevant information contained within it.

The logical paths leading to the generation of the four data structures are outlined in Figure 1. By considering the relationships among and the content within each of these elements of a research project, qualitative researchers can systematically organize their data to make analysis and the reporting of results more efficient and reliable.

The question. Qualitative data collection and analysis, like their quantitative counterparts, begin with a research question. The question influences those who contribute primary data (sources) and those who analyze the data (coders). The generation of research questions, qualitative or otherwise, is a complex topic in itself and is not discussed here. However, note that many answers loop back to new questions.

FIGURE 1
The Generation of Elements in the Qualitative Analysis Process



NOTE: The boxes labeled "Sources" and "Coders" indicate people who generate data elements (noted as "Objects" in subsequent boxes). Descriptions or representations of the people and of the objects are stored in data structures, which are indicated by boxes labeled "Data Structure."

Source. The use of the term "source" rather than "subject" or "participant" reflects the potential scope and complexity of qualitative data. Many qualitative data-collection strategies involve complex interactions between researchers and participants. Participants not only respond to questions but also often engage in extended dialog with the interviewer, and the interviewer's questions, comments, and responses must be interpreted along with those of the participant. The roles of participants and researchers may become deeply integrated, for example, when the cooperative inquiry method is used (Heron 1996). In interactive data collection, information emerges from the interaction of individuals, all of whom are considered sources regardless of their roles in the interaction.

Other data-collection strategies entail no direct interaction between researchers and participants. For example, researchers may use published text (such as novels or news stories) or graphics (such as advertisements). In these situations, the source would be the creator of the text or graphic object, and the researcher would not be considered part of the source element.

Some information sources may constitute aggregates of individuals who cannot be easily differentiated into individual sources. Examples include policy statements from government agencies, doctrines from religious institutions, and manifestos from grassroots organizations. Finally, there are situations in which the researcher observes the participants and records their behavior. Because the researcher generates the observation record, we are inclined to designate the researcher as a key source in this instance, along with the observed individuals or groups.

Source data structure. The sources constitute the sample in qualitative research and should be described as such. Decisions about which source characteristics to include for description and analysis should be driven by the research question and study design, including the sampling strategy. For most analyses, sociodemographic characteristics of sources, such as age, gender, ethnicity, and economic status, should be standard. Although qualitative sampling strategies often differ from those associated with quantitative analyses (Patton 1980; Johnson 1990), basic descriptive statistics (e.g., counts, frequencies, ranges, and measures of central tendency) are nonetheless appropriate for summarizing source characteristics. More important, these source characteristics can be used later to stratify the analysis and thereby uncover socially meaningful patterns in the primary object information.

For some analyses, the source data structure may include an extensive quantitative database developed by using standardized survey techniques; such an approach could support the full integration of statistical and qualitative analyses. For example, a survey-based research design may include a qualitative component in which a subsample of participants is interviewed in depth.

The ethnographic approach often distinguishes sources according to the type and quality of information that they provide. Thus, key informants are highly knowledgeable persons who provide detailed information on particular cultural phenomena such as concepts, events, and processes. Other sources may then be interviewed in less depth to assess the extent to which the perceptions of key informants are shared or can be validated. Ethnographers also often attempt to document their personal role transitions from naive outsider to community member or cultural expert to understand the effect that these transitions have on the type of information that they can access and the relative importance and meaning that they ascribe to the information. There is therefore a need for data structures that can accommodate variable or multiple roles for participants and researchers throughout a study. This issue becomes more critical when data are collected over long periods of time

(years or decades). Information accumulates in the source data structure, whereas knowledge and experience accumulate among the persons who constitute the sources. At a minimum, the passage of time should be evident in the database.

Through object-oriented computer technology, it is possible to develop source data structures that resemble dossiers and include items such as photographs, genealogies, resumes, or musical recordings. Although it may be feasible to include such objects, methods for searching, linking, and classifying the objects are needed if they are to serve an analytic purpose.

Primary object element. Sources generate the primary objects. When data are collected through interviews, primary objects may take the form of audio recordings, verbatim transcripts, verbatim excerpts, or interview notes. Sources also may generate objects in the form of graphics, photographs, and videotapes. In some situations, published ethnographic reports and archival field notes may be analyzed along with newly collected interviews. We recommend placing all such items in the primary object element and then identifying the author of the report, the ethnographer who recorded the field notes, and the interview participants as the sources for their respective objects.[4] Each item represents primary data sources in that each represents "tangible materials that provide a description of a historical event [or, in the ethnographic case, a historical context] and were produced shortly after the event took place [or the context was observed]" (Williamson et al. 1982:243). In general, a primary object exists as a result of the data collection process and is independent of the analysis process.

Primary-object data structure. A primary-object data structure can serve several functions, but its principle one should be to preserve the integrity of the digital representation of the primary objects. For text, this does not mean simply preserving a text file but an unchanging pattern of characters on the page. There are two reasons for emphasizing file format integrity. The first is related to scientific integrity: The text represents the core of the raw data; once the data have been cleaned and readied for analysis, they should be stable entities that are protected from further manipulation. The second reason has to do with the way that new elements are generated from the text element. As described later in this article, these generative elements are literally mapped to a specific electronic representation of the text by most qualitative software programs. If that representation is modified, the elements must be regenerated. The concept of file format integrity can be generalized to nontext objects as well. Indeed, this generalizability makes it possible to apply many text-based analytic strategies to nontext objects.

Primary-object data structures may contain self-referencing components. For example, a concordance, or word-occurrence list, summarizes the frequency with which words or phrases appear in the text. Word collocation matrices describe the frequency at which pairs of words occur together within predefined textual space (e.g., a certain number of lines of text or within-sentences or paragraphs). Semantic networks mathematically describe the significance of recurring terms in the text and the strength of relationships among significant terms. Components such as these can be used to generate new components (i.e., secondary objects) such as word-based coding systems or conceptual maps. Other features that can be summarized in the primary-object data structure include sentence length and textual complexity; most word processors can provide these types of text summaries (Ryan and Weisner 1996), and it seems reasonable to assume that they will eventually become standard components of qualitative-analysis software packages as well. With audio and video objects, the data structure can encompass features such as voice modularity or facial expression.

Coder element. The data analyst or the coder is a critical but often ignored element in qualitative analysis. In contrast, there is considerable discussion among qualitative researchers concerning the definition of the act of coding, which we will not review here.[5] From a database management perspective, coding activities can be divided into two categories: segmenting activities and metadata activities.

Segmenting activities. Any analytic actions that can be directly mapped onto text or other digitized objects are classified here as segmenting activities. Examples include defining the boundaries of a narrative passage or segment, applying codes to a segment, using tags or other marks to identify points in an object, and creating hyperlinks between segments or points in an object.

Metadata activities. Metadata activities entail the creation of data about data; here, we extend the meaning of data to encompass all symbolic representations of information and meaning. Prompted by meaning discerned in the primary objects, the coder generates metadata in the form of codes, comments, memos, and annotations, as well as graphical summaries of the interpreted objects (e.g., diagrams, networks, clusters, and maps) capable of showing the multidimensional structure of coding patterns.

Segmenting and metadata activities take place in an iterative fashion, with feedback between the two elements. For example, a typical sequence of coder activities may include the highlighting or bracketing of a chunk of text containing semantically related terms (segmenting), the creation of a code to

describe the cultural significance of the chunk of text (metadata), the establishment of a link between the code and the chunk in the database (segmenting), the creation of a memo describing related concepts described in the literature (metadata), the establishment of a link between the memo and the chunk in the database (segmenting), and incorporation of the code into a diagram describing conceptual links among related codes (metadata). This complex process is the primary focus of most qualitative approaches, including grounded theory (Strauss and Corbin 1990), semiotic psychology (Markel 1998), symbolic interactionism (Blumer 1969; Hall 1995), and conversation, or discourse, analysis (Moerman 1988; Hanson 1997).

Secondary-object data structure. The segment and metadata objects are combined to generate the secondary-object data structure. Although these two classes of activities are tightly linked in the coding process, their distinction is critical from a database perspective. Segment objects are the means by which the coder links his or her perceptions (metadata objects) with the meaning inherent in the text (primary objects). Conversely, they are the cut points for disentangling coder and source representations of reality. The secondary-object data structure should record the processes and linkages that generated the segment and metadata objects. As with the primary-object data structure, it also should safeguard the representational integrity of these objects.

The structural description of segment objects may be the most easily standardized component in text analysis. Such descriptions generally take the form of data tables in which pointers to line, column, or character position in the text file designate the beginning and end of the text segment and the placement of codes, tags, and hyperlinks. Some software systems use paragraph breaks or other word-processing elements to define the boundaries of segments; by their nature, such systems limit analysis to these predefined segments.

In contrast, metadata objects are highly complex. They may include text such as coding guidelines, hierarchical structures such as code trees, graphical maps of code relationships, and network structures summarizing hyperlinks within and between text passages. Dynamic links that permit changes in one metadata object to cascade through related objects are critical for efficient analysis.

Coder data structure and intercoder agreement. The framing of the research question influences the coders, who, in turn, generate segment and metadata objects from their reading of the primary objects. The coder cannot be disentangled from this process; as a result, qualitative analysis is

inherently subjective. This subjectivity has many dimensions, including the theoretical perspective of the coder; the coder's familiarity with the primary objects and their sources; the coder's knowledge, skills, and experience in qualitative methods; and the evolution of the coder's knowledge, skills, and experience over the course of the analysis. Little research has been done on the extent to which these dimensions influence qualitative analysis. The development of appropriate coder data structures would facilitate such assessments and improve our ability to obtain accurate, meaningful knowledge through the subjective process of analysis.

Concerns are justifiably raised about the potential idiosyncratic nature of segmenting and metadata activities (Weinberger et al. 1998). Effective strategies for dealing with these concerns entail the use of multiple coders and standardized comparisons of intercoder agreement on the generation of specific segment and metadata objects (Carey, Morgan, and Oxtoby 1996; MacQueen, McLellan, et al. 1998). The coder data structure in combination with the secondary object data structure provide a mechanism for assessing the coder's influence on the analysis and evaluating the appropriateness of that influence. The results of such assessments can then be used to strengthen consensus on coding strategies and to pinpoint areas in which coders need further training.

GENERATING THE ANSWER

A fully developed answer to the research question is derived through analyses that combine the source, primary-object, and secondary-object data structures. How those structures are combined will depend on the theoretical and methodological paradigms of the researcher and the researcher's skill. The answer, we hope, will not be limited by a poorly organized database.

NOTES

1. AnSWR can be downloaded free from the World Wide Web at http://www.cdc.gov/nchstp/hiv_aids/software/answr.htm.

2. Complexity theorists use chaos and dynamical systems theory and their attendant mathematical models to understand emergent properties and phenomena in physics, biology, economics, astronomy, sociology, archeology, and other scientific domains (Gleik 1988; Rosser 1991; Capra 1996; Smith 1998).

3. Ragin's (1987:8–9) use of the term "observation unit" roughly corresponds to our concept of primary objects and the term "explanatory unit" to that of secondary objects.

4. Werner (1998) has made similar arguments for the clear attribution of primary-data sources during the course of fieldwork, suggesting that "the ethnographer's notes and transcriptions of native texts should be separated and their use should be clearly distinguished in the ethnographic report" (p. 3).

5. For a discussion of our approach to textual coding, see MacQueen, McLellan, et al. (1998).

REFERENCES

Blumer, H. 1969. *Symbolic interactionism: Perspective and method.* Berkeley: University of California Press.

Capra, F. 1996. *The web of life: A new scientific understanding of living systems.* New York: Anchor.

Carey, J. W., M. Morgan, and M. J. Oxtoby. 1996. Intercoder agreement in analysis of responses to open-ended interview questions: Examples from tuberculosis research. *CAM Journal* 8(3): 1–5.

Gleik, J. 1988. *Chaos: Making a new science.* New York: Penguin.

Hall, P. 1995. The consequences of qualitative analysis for sociological theory: Beyond the micro level. *Sociological Quarterly* 38:439–67.

Hanson, R. E. 1997. Objectivity and narrative in contemporary reporting: A formal analysis. *Symbolic Interactionism* 20(4): 385–96.

Hays, R. B., S. M. Kegeles, B. Ralston, and T. Slama. 1998. How would gay men decide whether or not to participate in an HIV vaccine trial? Poster presentation at the 12th World AIDS Conference, June 28-July 3, Geneva, Switzerland.

Heron, J. 1996. *Cooperative inquiry: Research into the human condition.* Thousand Oaks, CA: Sage.

Johnson, J. 1990. *Selecting ethnographic informants.* Newbury Park, CA: Sage.

Kegeles, S. M., R. P. Strauss, D. S. Metzger, T. Slama, B. W. Ralston, R. B. Hays, and K. M. MacQueen. 1998. How should large-scale HIV vaccine efficacy trials be conducted? Recommendations from U.S. community members likely to be targeted. Poster presentation at the 12th World AIDS Conference, June 28-July 3, Geneva, Switzerland.

Kelle, U. 1997. Theory building in qualitative research and computer programs for the management of textual data. *Sociological Research Online* 2(2). Available from the World Wide Web at: http://www.socresonline.org.uk/socresonline/2/2/1.html.

Lee, R. M., and N. Fielding. 1996. Qualitative data analysis: Representations of a technology: A comment on Coffey, Holbrook and Atkinson. *Sociological Research Online* 1(4)SS 4.4. Available from the World Wide Web at: http://www.socresonline.org.uk/socresonline/1/4/1f.html.

Levine, H. G. 1985. Principles of data storage and retrieval for use in qualitative evaluations. *Educational Evaluation and Policy Analysis* 7(2): 169–86.

MacQueen, K. M., L. Blanchard, E. McLellan, G. Millett, D. Metzger, S. Kegeles, and R. Strauss. 1998. Who is "the community" in community collaboration? Poster presentation at the 12th World AIDS Conference, June 28-July 3, Geneva, Switzerland.

MacQueen, K. M., E. G. McLellan, K. Kay, and B. Milstein. 1998. Codebook development for team-based qualitative analysis. *CAM Journal* 10(2): 31–6.

MacQueen, K. M., and R. T. Trotter. 1997. Project LinCS: A multisite ethnographic design for public health research. American Anthropological Association 96th Annual Meeting, November 19-23, Washington, DC.

Markel, N. 1998. *Semiotic psychology: Speech as an index of emotions and attitudes.* New York: Peter Lang.

Moerman, M. 1988. *Talking culture: Ethnography and conversation analysis.* Philadelphia: University of Pennsylvania Press.

Patton, M. Q. 1980. *Qualitative evaluation methods.* Beverly Hills, CA: Sage.

Ragin, C. C. 1987. *The comparative method: Moving beyond qualitative and quantitative strategies.* Berkeley: University of California Press.

Rosser, J. B., Jr. 1991. *From catastrophe to chaos: A general theory of economic discontinuities.* Boston: Kluwer.

Ryan, G., and T. Weisner. 1996. Analyzing words in brief descriptions: Fathers and mothers describe their children. *CAM Journal* 8(3): 13–6.

Smith, R. D. 1998. Social structures and chaos theory. *Sociological Research Online* 3(1). Available from the World Wide Web at: http://www.socresonline.org.uk/socresonline/3/1/11.html.

Spradley, J. P. 1979. *The ethnographic interview.* New York: Holt, Rinehart & Winston.

Strauss, A., and J. Corbin. 1990. *Basics of qualitative research: Grounded theory procedures and techniques.* Newbury Park, CA: Sage.

Weinberger, M., J. A. Ferguson, G. Westmoreland, L. A. Mamlin, D. S. Segar, G. J. Eckert, J. Y. Greene, D. K. Martin, and W. M. Tierney. 1998. Can raters consistently evaluate the content of focus groups? *Social Science & Medicine* 46(7): 929–33.

Werner, O. 1998. Short take 24: Do we need standards for ethnography? *CAM Journal* 19(1): 1–3.

Williamson, J. B., D. A. Karp, J. R. Dalphin, and P. S. Gray. 1982. *The research craft: An introduction to social research methods.* 2d ed. Glenview, IL: Scott Foresman.

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