Practicing Qualitative Research

Constant Comparison Method: A Kaleidoscope of Data

by
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Abstract

This paper will attempt to illustrate the use of a kaleidoscope metaphor as a template for the organization and analysis of qualitative research data. It will provide a brief overview of the constant comparison method, examining such processes as categorization, comparison, inductive analysis, and refinement of data bits and categories. Graphic representations of our metaphoric kaleidoscope will be strategically interspersed throughout this paper.

Introduction

As novices to qualitative investigation and data analysis, a research class project left us in the midst of simultaneous learning and doing. This created a challenging and sometimes frustrating journey through the mountains of "how to do" qualitative research. Our challenge centers on making the connection between the reading about qualitative research and the hands-on application of qualitative research. We used the constant comparison method to analyze our data and the metaphor of a "kaleidoscope" to guide us through the analysis process. A kaleidoscope, as defined by *Webster's New Collegiate Dictionary* (Mish, 1990), is "an instrument containing loose bits of colored glass between two plain mirrors and two flat plates so placed that changes of position of the bits of glass are reflected in an endless variety of patterns" (p. 656).

Constant Comparison Method

According to Patton (1990, p. 376), "The first decision to be made in analyzing interviews is whether to begin with case analysis or cross-case analysis." We began with cross-case analysis of three interviews, using the constant comparison method "to group answers . . . to common questions [and] analyze different perspectives on central issues."

Glaser and Strauss (cited in Lincoln & Guba, 1985, p. 339) described the constant comparison method as following four distinct stages:

1. comparing incidents applicable to each category,
2. integrating categories and their properties,
3. delimiting the theory, and
4. writing the theory. (p. 339)

Our analysis follows these guidelines closely. According to Goetz and LeCompte (1981) this method "combines inductive category coding with a simultaneous comparison of all social incidents observed (p. 58). As social phenomena are recorded and classified, they are also compared across categories. Thus, hypothesis generation (relationship discovery) begins with the analysis of initial observations. This process undergoes continuous refinement throughout the data collection and analysis process, continuously feeding back into the process of category coding. "As events are constantly compared with previous events, new topological dimension, as well as new relationships, may be discovered" (Goetz & LeCompte, p. 58).

Categorizing Data Bits

According to Bruner, Goodnow, and Austin (1972), "To categorize is to render discriminably different things equivalent, to group the objects and events and people around us into classes, and to respond to them in terms of their class membership rather than their uniqueness" (p. 16). The act of categorizing enables us to reduce the complexity of our environment, give direction for activity, identify the objects of the world, reduce the need for constant learning, and allow for ordering and relating classes of events. At the perceptual level, categorizing consists of the process of identification, " a 'fit' between the properties of a stimulus input and the specifications of a category. . . . An object of a certain color, size, shape, and texture is seen as an apple." (Bruner, Goodnow, & Austin, p. 176).

Categories, created when a researcher groups or clusters the data, become the basis for the organization and conceptualization of that data (Dey, 1993). "Categorizing is therefore a crucial element in the process of analysis" (Dey, p. 112). Content analysis, or analyzing the content of interviews and observations, is the process of identifying, coding, and categorizing the primary patterns in the data (Patton, 1990). "The qualitative analyst's effort at uncovering patterns, themes, and categories is a creative process that requires making carefully considered judgments about what is really significant and meaningful in the data (Patton, p. 406).

Inductive analysis (Patton, 1990) means that the patterns, themes, and categories of analysis "emerge out of the data rather than being imposed on them prior to data collection and analysis" (p. 390). According to Dey (1993), a natural creation of categories occurs with "the process of finding a focus for the analysis, and reading and annotating the data" (p. 99). These categories, while related to an appropriate analytic context, must also be rooted in relevant empirical material: "The analyst moves back and forth between the logical construction and the actual data in a search for meaningful patterns" (Patton, p. 411). The meaning of a category is "bound up on the one hand with the bits of data to which it is assigned, and on the other hand with the ideas it expresses" (Dey, p. 102).

Several resources are particularly useful to the process of category generation: "inferences from the data, initial or emergent research questions, substantive, policy and theoretical issues, and imagination, intuition and previous knowledge" (Dey, 1993, p. 100). To utilize those resources optimally, the researcher should become thoroughly familiar with the data, be sensitive to the context of the data, be prepared to extend, change and discard categories, consider connections and avoid needless overlaps, record the criteria on which category decisions are to be taken, and consider alternative ways of categorizing and interpreting data (Dey, p. 100).

According to Lincoln & Guba (1985), the essential task of categorizing is to bring together into temporary categories those data bits that apparently relate to the same content. It is then important to "devise rules that describe category properties and that can, ultimately, be used to justify the inclusion of each data bit that remains assigned to the category as well as to provide a basis for later tests of replicability" (p. 347). The researcher must also render the category set internally consistent.

Comparing Data

Categories must be meaningful both internally, in relation to the data understood in context, and externally, in relation to the data understood through comparison (Dey, 1993). When a particular category is adopted, a comparison is already implied.

To compare observations (Dey, 1993), we must be able to identify bits of data which can be related for the purposes of comparison. In principle, data is organized by grouping like with like: data bits with data bits. After the bits are separated into piles, each bit is compared within each pile. Data requiring further differentiation, will be divided up into separate "sub-piles." We could then compare observations within each pile or sub-pile, looking for similarities or differences within the data. We could also look for patterns or variations in the data by making comparisons between the different piles or sub-piles. However, things are not simply "alike or related - they are alike or related in some respect or another. Distinctions are always conceptual as well as empirical - they reflect some criterion or criteria in terms of which observations are distinguished and compared" (Dey, p. 96).

The researcher uses constant comparative analysis to look for statements and signs of behavior that occur over time during the study (Janesick, 1994). The process of constant comparison "stimulates thought that leads to both descriptive and explanatory categories" (Lincoln & Guba, 1985, p. 341).

Refining Categories

The meaning of the category evolves during the analysis, as more and more decisions are made about which bits of data can or cannot be assigned to the category (Dey, 1993). The fit between data and categories--the process of developing categories--is one of continuous refinement. "Flexibility is required to accommodate fresh observations and new directions in the analysis" (Dey, p. 111).

During the course of the analysis (Dey, 1993), the criteria for including and excluding observations, rather vague in the beginning, become more precise. The research must continually attempt to define and redefine categories by specifying and changing the criteria used for assigning them to the data. In so doing, one must recognize that any definitions developed in the beginning will probably be quite general and contingent in character. "In defining categories, therefore, we have to be both attentive and tentative - attentive to the data, and tentative in our conceptualizations of them" (p. 102).

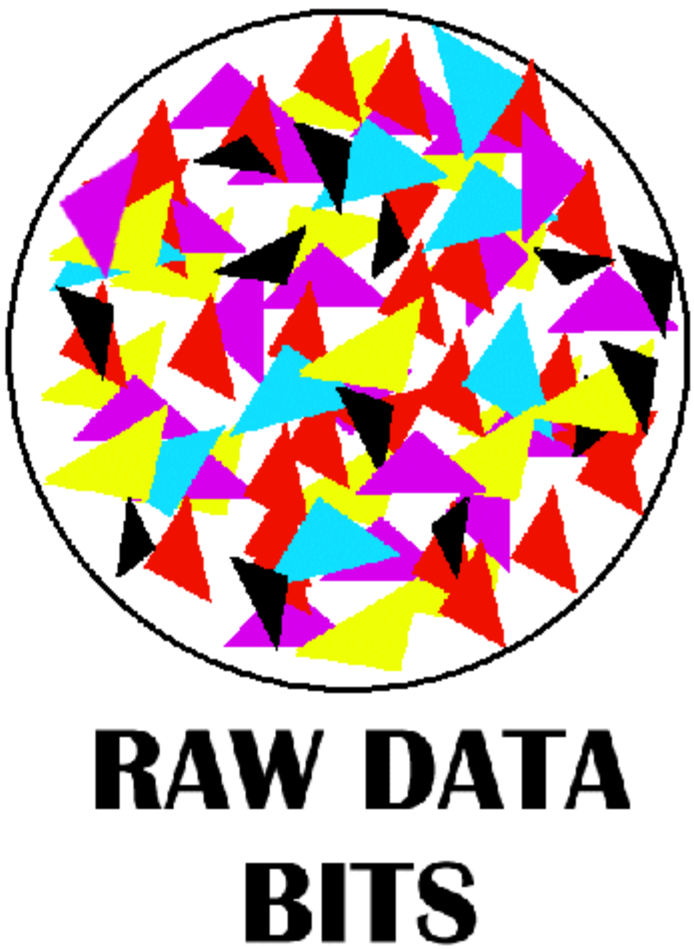
Kaleidoscope Metaphor

Metaphors, powerful and clever ways of communicating findings, can converge a great deal of meaning in a single phrase (Patton, 1990). "It is important, however, to make sure that the metaphor serves the data and not vice versa" (Patton, p. 402). In using the kaleidoscope as a metaphor for this project, the loose bits of colored glass represented our data bits, the two plain mirrors represented our categories, and the two flat plates represented the overarching category that informed our analysis. The endless variety of patterns in a kaleidoscope represented the constant comparison of our data bits in our unending journey to create category arrays. The following discussion will attempt to explain our category development and the use of the constant comparative method (Lincoln & Guba, 1985), as viewed through the kaleidoscope metaphor. By sharing our step-by-step analysis process, we hope to bridge the gap between the theoretical methodology and actual hands-on data analysis.

Data Bits: The Kaleidoscope's Colored Glass

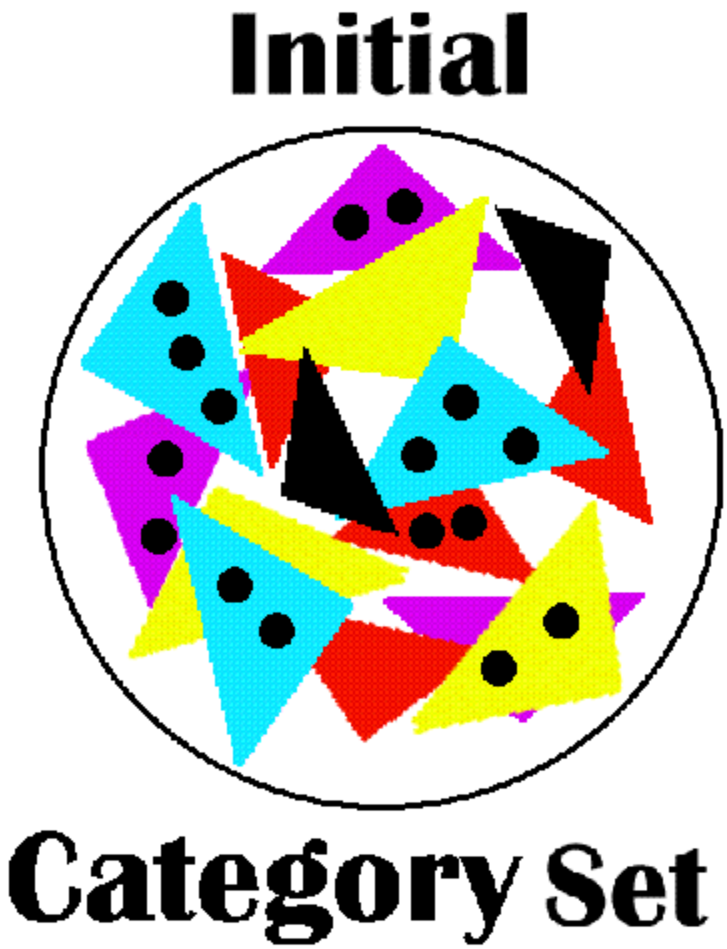
In actuality, we began the constant comparison during the process of breaking down the data into data bits. After transcribing three interviews, we entered the analysis phase by selecting one transcript and having all of the researchers read it. After reading it, we broke the interview data into data bits, which we likened to the kaleidoscope's colored glass. We used scissors to cut the data bits directly from the transcript. At this point, our kaleidoscope of raw data bits had no particular pattern or sense of connection. We needed to discover the relationship between the various bits of colored glass, so we convened to place the data bits into piles according to their "look alike, feel alike" qualities (Lincoln & Guba, 1985). For a representation of this process see Figure 1.

Figure 1



After creating numerous piles, we looked over them, came up with some preliminary rules of inclusion, and wrote preliminary category names on the back of each data bit. After agreeing on a tentative list, we wrote the rules of inclusion and the tentative category names on sheets of neon-colored, coded paper. After mixing the data bits together, we each placed the data bits into categories based on our preliminary rules of inclusion. We checked to see if there were data bits that were not placed in their previously assigned categories. When this occurred, we compared the categories and agreed on a placement that felt right at the time. We used removable tape to secure the data bits to the neon-colored papers, which were labeled with preliminary category names and rules of inclusion. We placed all of the unassigned data bits into an envelope labeled "miscellaneous." See Figure 2 for a visual representation.

Figure 2



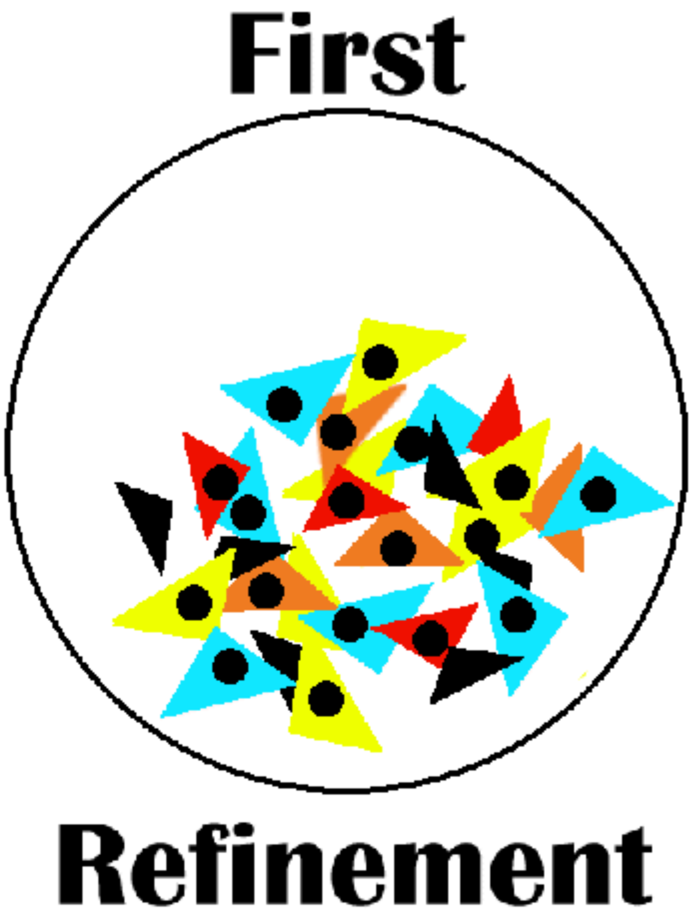
We took the remaining two transcripts and repeated the same process of category assignment. After all three transcripts were broken down into data bits and placed in categories, we viewed the process through the kaleidoscope metaphor. We saw neon-colored bits of glass swirling around with some cursory sense of relatedness and pattern. These bits of colored glass represented our initial category set.

First Refinement: The Kaleidoscope Changes Its Pattern

After careful scrutiny of data bits in each category, we created a tentative list of all categories. In doing so, we discovered that two themes had emerged from the categories containing the data and not solely from the data itself. These themes, based on the "how" of the data and the "why" of the data, allowed for more precise sub-category development.

By combining some of the tentative categories that looked and felt alike, we created some sub-categories and revised our rules of inclusion. The kaleidoscope's pattern was now beginning to take on a definite shape and form. The colored bits of glass now represented categories that were reflected in the kaleidoscope's two large plain mirrors. Two large, neon-colored, triangular glass bits represented our theme-based categories. The smaller individual glass bits were fewer in number, and many of those colored glass bits now contained black dots. Each black dot symbolized a sub-category assigned to a specific category. We had now completed our first major category refinement. See Figure 3 for a representation of this step.

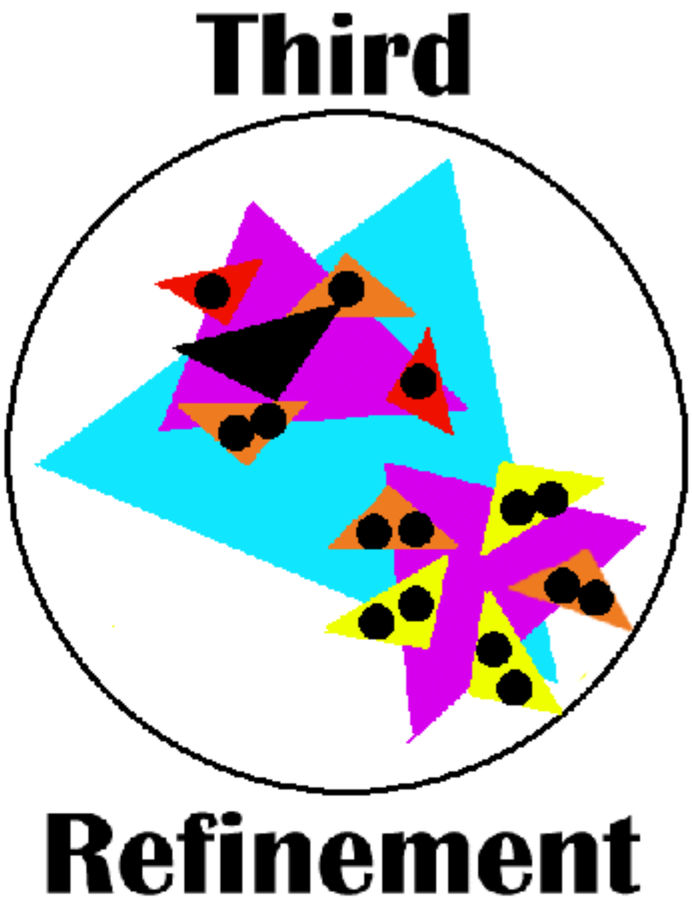
Figure 3



Second and Third Refinements

Category refinement remained an ongoing process throughout the data analysis. When examining the relationship between categories, we found that certain categories were subsumable under others, while some needed to be sub-divided even further. At this point, we began to sift our way through the "miscellaneous" envelope and realized that many of these data bits now seemed to fit into some of our previously established categories. As the refinements became more focused, we found that some of the data bits did not fit a category's rule of inclusion. Sometimes the rule of inclusion needed to be reviewed and modified. When this was done, we examined the category's data bits to insure that they still fit. Finally, we carefully scrutinized every data bit to ascertain its fit with the assigned category's rule of inclusion. The kaleidoscope pattern now consisted of a well-defined pattern of glass bits: fewer in number, but containing more sub-categories--represented by black dots--than were present following the first category refinement. (See Figure 4)

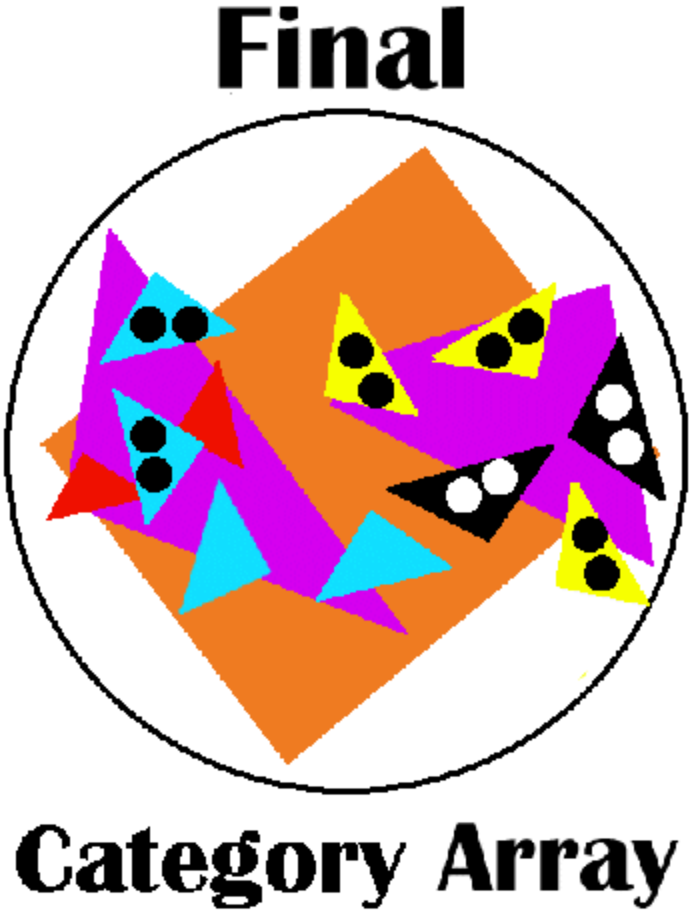
Figure 4



Final Category Array: A Well-Defined Kaleidoscope Pattern

After reading and re-reading the interview transcripts and slicing the data into smaller bits, we established that most of the emerging data related to one overarching theme. The categories, refined categories, and sub-categories informed the overarching theme. The kaleidoscope pattern now included a large rectangular piece of neon-colored glass, which represented the overarching theme, two medium, triangular, neon-colored bits of glass and nine small triangular neon-colored bits of glass, which represented the categories, and fourteen black dots, which represented the sub-categories. These black dots appeared in pairs on seven of the small triangles. (See Figure 5 for final refinement)

Figure 5



The kaleidoscope metaphor became a template for the organization of our analysis. To help us graphically conceptualize our data analysis, we constructed a visual representation of a kaleidoscope and cut and pasted neon-colored shapes to illustrate the development of our final category array.

Conclusion

Although we found qualitative data analysis to be a complex process, the kaleidoscope metaphor became a helpful template, which enabled us to make better sense of the emerging data. By using this metaphor, we learned the importance of allowing categories to fit the data, rather than actively creating categories to fit the data. We used the constant comparison method of analysis to organize our data bits and categories, visually representing this process through the kaleidoscope metaphor: the loose bits of colored glass represented our data bits, the two plain mirrors represented our categories, and the two flat plates represented the overarching category that informed our analysis. This metaphor helped us to conceptualize the process of ongoing category refinement that ultimately led to the development of our final category array.

References

Bruner, J. D., Goodnow, J. J., & Austin, G. A. (1972). Categories and cognition. In J. P. Spradley

(Ed.). *Culture and cognition* (pp. 168-190). New York: Chandler.

Dey, I. (1993). Creating categories. *Qualitative data analysis* (pp. 94-112). London: Routledge.

Goetz, J. P., & LeCompte, M. D. (1981). Ethnographic research and the problem of data reduction. *Anthropology and Education Quarterly, 12*, 51-70.

Janesick, V. J. (1994). The dance of qualitative research design: Metaphor, methodology, and meaning. In N. K. Denzin, & Y. S. Lincoln (Eds.), *Handbook of qualitative research* (pp. 209-219. Thousand Oaks, CA: Sage.

Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic inquiry*. Newbury Park, CA: Sage.

Mish, F. C. (Ed.). (1990). *Webster's ninth new collegiate dictionary*. Springfield, MA: Merriam-Webster, Inc.

Patton, M. Q. (1990). *Qualitative evaluation and research methods* (2nd ed.). Newbury Park, CA: Sage.

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