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Blending the Old and the New: Qualitative Data Analysis a s Critical Thinking and Using NVivo with a Generic Approach

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Abstract

In this article the authors seek to make the case that qualitative data analysis can be explained within the framework of critical thinking and incorporates within this framework the role of technology – specifically NVivo. First they discuss critical thinking from the perspectives of Bloom, Adler, and Polanyi. They then link critical thinking to the concept of a general inductive approach to qualitative analysis as described by Thomas. Finally, they illustrate connections of both critical thinking and the general inductive approach to technology using NVivo screenshots.

Keywords

Critical Thinking, General Inductive Approach, Coding, Nvivo

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Blending the Old and the New: Qualitative Data Analysis as Critical Thinking and Using NVivo with a Generic Approach

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In this article the authors seek to make the case that qualitative data analysis can be explained within the framework of critical thinking and incorporates within this framework the role of technology – specifically NVivo. First they discuss critical thinking from the perspectives of Bloom, Adler, and Polanyi. They then link critical thinking to the concept of a general inductive approach to qualitative analysis as described by Thomas. Finally, they illustrate connections of both critical thinking and the general inductive approach to technology using NVivo screenshots. Keywords: Critical Thinking, General Inductive Approach, Coding, NVivo

The purpose of this article is to position qualitative data analysis and interpretation within the framework of critical thinking and to demonstrate how to use a generic approach and Nvivo within this framework to make sense of data.

Arguing that qualitative data analysis and interpretation is essentially a variant of critical thinking can be explained partly (though not completely) using Bloom's Taxonomy (Bloom, Engelhart, Furst, Hill, & Krathwohl, 1956) where educational objectives are positioned in an ascending hierarchy. We also draw on Adler's description of reading for meaning (Adler, 1964) to show that making sense of textual data goes deeper than cursory analysis but also involves "reading between the lines" which conveys the complexity and non-linearity of reality that the human mind and emotions are capable of capturing -- but perhaps not universally adept at communicating via written language. In addition to traditional cognitive considerations, qualitative researchers also embrace an empathetic and reflexive understanding of participants and reality that is consistent with Polanyi's (1958) conception of "tacit knowledge." Tacit knowledge, while not antagonistic to a "scientific" way of knowing, posits that alternative avenues such as intuition and gut instinct also offer ways to know using more subtle means such as subliminal awareness and sensitivity to context -- we include these means as an often-ignored aspect of critical thinking. These three ways of knowing advanced by Bloom, Adler, and Polanyi constitute the basis for the "old" component of this article. This somewhat strange admixture also suggests to us that perhaps the best exemplars of conveying and enlarging the richness of our perceived realities are artists, musicians, poets, and novelists and those researchers who appreciate and are able to draw upon these different ways of knowing.

While we see these "old" components to be of immeasurable value for providing an explanatory framework for qualitative data analysis, we also will demonstrate how a "new" technological and paradigmatic component can work in concert to put critical thinking into action. Regarding technology, little need be said about how it continues to dramatically change virtually every aspect of our lives including how we learn and communicate.

Technology, however, presents its own challenges both in terms of learning how to use it and knowing what to use it for. NVivo, which is referenced in this paper and accompanying demonstration, is a particular type of qualitative data analysis software package whose purpose is to assist researchers in their efforts to make sense of qualitative data. The other "new" component advanced here is a generic data analysis approach (Thomas, 2006) that will be used to guide the use of NVivo within the encompassing framework of critical thinking.

Let the reader beware, however, that this paper is not intended to be at the forefront of technological innovation; rather, its intent is simply to try and bridge the gap between technology and a specific conceptual and analytical framework for viewing qualitative data analysis. It should also be made clear that the four contributors to this paper bring unique backgrounds and perspectives to this endeavor. We feel privileged to be able to share our perspectives with others who we trust will be kind enough to do likewise. What more could anybody ask in our field of qualitative inquiry?

Qualitative Data Analysis as Critical Thinking

Benjamin Bloom

One of the first challenges experienced by newcomers to qualitative research is to make sense of the myriad terms, views, and approaches that are suggested in often vague ways for analyzing qualitative data. When trying to make sense of new situations, we humans often first simplify matters by breaking them down into more digestible parts, which of course, is the essence of analysis. While such simplification is a necessary condition for beginning to construct personal knowledge and meaning, the danger is to simplify things to such a degree that we lose the essence and richness of the original idea, approach, or context. Therefore, after de-construction, we need to find a way to re-construct our own renditions of phenomena so that they fit into our conceptual schema which is the essence of integration or interpretation. The hierarchy presented by Bloom et al. (as updated by Anderson & Krathwohl, 2001) although not a perfect representation of critical thinking and often used in a way that glorifies linear logic, offers us a way to conceptualize the "levels" that we use when confronted with learning a complex task (Figure 1).

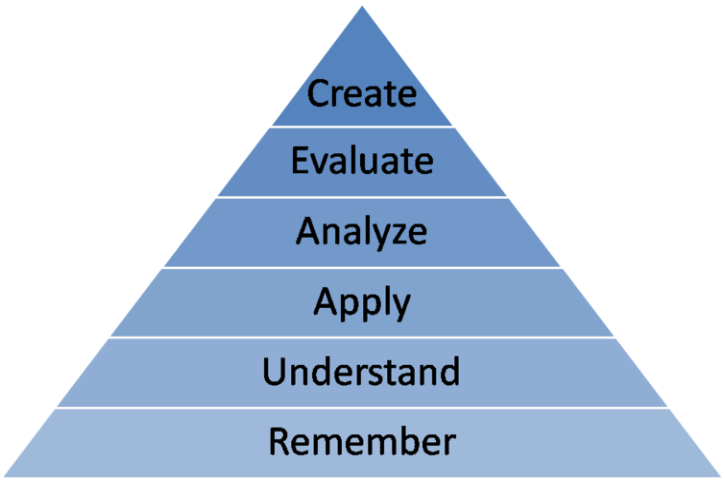


Figure 1. Bloom's Revised Taxonomy (Anderson & Krathwohl, 2001)

A fundamental assumption underlying this taxonomy is that the levels are cumulative and hierarchical, meaning that the attainment of upper levels requires first the attainment of lower levels. If we accepted this position completely, we would be forced to conclude that

unless we already knew and understood a phenomenon completely, we would not be able to evaluate the worth of something or create something new. There are many instances where this position does not seem to hold true; for example, do artists need to understand the technical aspects of the economic system to portray its effects on everyday living? Or, do we need to know the ins and outs of wine production to declare that a particular wine is superior to another? In addition, the taxonomy's linear hierarchical structure does not reflect the iterative and recursive loops that occur in actual human thought and discovery. For example, do we not sometimes find that "creation" or "evaluation" serve to deepen or refute what we thought we already knew? Similarly, when we analyze a phenomenon, don't we gain additional knowledge and understanding?

In addition to this lack of allowance for iterative and recursive loops, there is also overlap and uncertainty as to which "verbs" belong under each level of the Taxonomy. For example the term "interpret" can be associated with both the "understanding" level as well as the "creating" level. This should actually not be surprising to those of us who do not find a need to rush to simplify the complexities that we find in both people and phenomena; rather, an overlap of terminology seems perfectly plausible when we consider the "overlap" and "inconsistencies" that we often find along the path of living and discovering new knowledge. The fact that data collection-analysis-interpretation are often concomitant happenings in qualitative research is also consistent with the descriptions presented of how different parts of the human brain have specialized capabilities such as spatial and language. Yet human beings in action in the real world are not aware of these demarcations – they simply go about creating, visualizing, solving, and communicating in a seamless manner. While we go about analyzing, simplifying, and deconstructing, we almost simultaneously are interpreting, re-complexifying, and re-constructing so that we end up with a unique creation – quite exhilarating and so very much at odds with a level-by-level hierarchy such as the taxonomy.

Paradoxically, we believe that the Taxonomy does offer us a way to look at something as seemingly esoteric as qualitative data analysis by examining the verbs that are associated with the analysis, evaluation, and creation levels. While we do not want to dissect phenomena to the point that they are no longer recognizable, we do recognize the need to first simplify in order to construct meaning and ultimately to synthesize and create. Given this complexity, why do we still wonder at the messiness of research?

Mortimer J. Adler

Unlike Bloom and his colleagues, Mortimer Adler was not as didactic regarding critical thinking nor did he develop a taxonomy. Rather, Adler was a proponent of the "great books" and criticized the elective system in American colleges and universities because he viewed it as a departure from the seminal thinking and ideas upon which western civilization was built. While we do not need to agree with Adler's perspective on American higher education, he does make some rather powerful points regarding writing and reading. In "How to Read a Book" (1964), Adler reminds us that reading is often seen as a passive activity while writing is seen as more active. He argues, however, that reading done correctly is just as active as writing or any other activity including those where kinesthetic motion is involved. He unhappily agrees that most people do not read actively and therefore only attain superficial knowledge rather than understanding or beyond in terms of Bloom's Taxonomy. He does, however, provide a memorable illustration of people reading at the deepest and most insightful levels – when they are in love and read a letter from their beloved. Here Bloom maintains that for many of us, this may be the only time that we read actively and use every ounce of our skill to extract meaning. He alludes to the person in love as "reading between the lines" and here is where we see an extension of Bloom's take on thinking to include feelings

as a supplement to reasoning. Adler further supports the direct connections between critical thinking, reading, and analysis when he argues that "the art of reading, in short, includes all the same skills that are involved in the art of discovery: keenness of observation, readily available memory, range of imagination, and, of course, a reason trained in analysis and reflection" (p. 43). Analyzing and interpreting qualitative data (whether in the form of transcripts, emails, texts, tweets, or love letters), requires that we consider both the explicit message as well as the additional meaning that can be squeezed from the "white space" that surrounds these messages.

Polanyi

The third view of critical thinking we would now like to introduce is one that extends Adler's drift into feeling from a purely mind-locked rational perspective and into a full-scale acceptance of ways of knowing that defy rational explanations. As noted in the introduction, Polanyi (1958) posited that intuition and gut feeling offer additional ways of knowing. There might be a touching point here between these ways of knowing and Bloom's creativity but to us, Polanyi evokes the unsaid words and the empathetic glances and nods that happen in all of our lives and that are especially poignant when portrayed in plays, movies, and novels. So, is this type of knowing really critical thinking? Our sense is that just as with real life and real people, the complexity of reality and the reality of complexity make it quite apparent (at least after a period of maturity, experience, and reflection) that trying to catch what's really going on requires that we open ourselves to multi-modal learning channels and these channels, in ways that we cannot easily explain, pass through and utilize not only the brain but also the heart, hands, and voice. While the rationalistic bent in some of us hastens to add that that these latter attributes are but metaphorical, we want to suggest that perhaps the very way that we typically communicate about reality in the academic world based on accepted standards of writing and reporting (think APA, American Psychological Association, 2010) militates against our capturing what "tacit knowledge" has to offer. This, of course, is where qualitative inquiry has started to open up the windows and let in the air of other conceptions of reality that place value on perceptions and feelings as valid aspects of reality. Phenomena cannot be fully understood separate from the insights of those who experience and seek to put meaning to these phenomena and these insights may arise without the assistance of tacit knowledge.

While arguing that qualitative data analysis is essentially critical thinking, we also thought it might also help to clean up some of the "fuzziness" and professional jargon surrounding the black box where we often shroud qualitative data analysis. However, based on the disparate facets of critical thinking that have been explored (Bloom, Adler, Polanyi), we wonder if "fuzziness" is simply not inherent in the enterprise! Human beings and consequently their organizations and societies are in fact "fuzzy" and unless we are willing to reduce ourselves and our culture to linear or even curvilinear equations, then we might be better served by using a type of "fuzzy logic" that includes feelings, perceptions, and empathetic knowing in addition to more scientific approaches. In our view, using multiple methods rigorously trumps identifying ipso facto one way of knowing as valid. The human condition simply will not admit of this artificial demarcation and trying to solve complex problems in education and the social sciences with just one approach is doomed to fail. What is just as disheartening is that some continue to refuse to recognize that not only can phenomenology, grounded theory, and other qualitative approaches contribute to helping us understand and solve pressing national problems, but that it can do so because of the way that data can be analyzed and made sense of by using the full capacities of human beings. These capacities allow us to mesh science with an enlarged understanding of critical thinking that

acknowledges and reflects on the roles of perception, empathy, sensitivity, and intuition as well as analysis and synthesis.

Bloom, Adler, and Polanyi would probably be surprised by their being grouped as three voices in support of the argument that qualitative data analysis is critical thinking. We like to think, however, that they would come to see validity in this argument. In any event what follows are the "new" aspects of this presentation that feature qualitative data analysis using NVivo software and based on a generic approach for analyzing qualitative data advanced by Thomas (2006). However, we hope that just like with Bloom, Adler, and Polanyi that our readers see how our conception of critical thinking encapsulates and further defines this approach.

The Generic or General Inductive Approach to Analysis and Interpretation

Now that we have "set the stage" by presenting our case that qualitative data analysis can be conceptualized in terms of critical thinking, we are ready to describe a framework that is consistent with this conception and useful for helping researchers to analyze their data. Lichtman (2013) points out that a "generic approach" is used by many researchers to analyze data but after reviewing many research articles concludes that the researchers "did not discuss details of how the coding was accomplished or how the themes were derived from the codes" (p. 258). It is first important to note that the term "coding" is often used as a synonym for "analysis." We now interpret Lichtman's observation (which is a bit strange since one of us is the author) in light of the complex and simultaneous analyzing-synthesizing and simplifying-complexifying activities that routinely occur in critical thinking. In fact, we now wonder if we should just let the fuzziness remain fuzzy, go along for the ride, and see what happens! However, we are not yet ready to fully throw off the shackles of linearity and so we now will go about describing a sequential and orderly model for making sense of data that is usually anything but sequential and orderly; that is, data that are collected to try and understand the realities of the human condition.

There are many approaches that have been advanced for analyzing qualitative data. These approaches generally use some form of "coding" that begins the process of reducing data into segments that will hopefully lead to semantic, epistemological, and ontological understanding of phenomena by the researcher and readers. Saldana (2009) reviews 29 approaches for coding qualitative data with the intention of helping researchers to further burrow for understanding.

Thomas (2006), while not arguing against traditional analytical approaches, points out that many researchers find that a generic or general approach to analyzing qualitative data enables them to wring meaning from these data that answer research questions without having to wrestle with complex issues of philosophy and technical language. In a similar vein, Lichtman (2013) suggests the sequence of codes-categories-concepts as the "Three Cs" of data analysis (p. 251). Neither Thomas nor Lichtman disparage specific and more complicated methods of data analysis associated with traditions such as grounded theory or phenomenology; in fact, Thomas points out that "… the general inductive approach is not as strong as some other analytic strategies for theory or model development…" (p. 237). However, Thomas also argues that it is often the case that researchers find that a more straightforward inductive approach enables them to make sense of data in relation to evaluation criteria or research questions.

Thomas (September 11, 2012) in a personal email stated that:

> Looking at recent journal papers, generic qualitative analysis methods are still commonly used. I think there are several reasons why they are used. Many

> researchers are pragmatic and do not want to get into detailed epistemological debates about the nature of reality and science. They just want to analyse and report the data they have collected. Generic methods offer this option. Another advantage is that generic methods do not require the learning of specialist terminology associated with some of the other analytic methods. They also avoid getting into methodological debates that are evident within each of the main labeled methods such as grounded theory, phenomenology and discourse analysis. I think there is a sense that some of the qualitative methods have over-elaborated frameworks and concepts which complicate things in terms of getting the analysis done. Generic methods allow researchers to bypass these complications. Having said that, I think all three of grounded theory, phenomenology and discourse analysis have made important contributions to generic qualitative analysis. For example the concepts of theoretical sampling and data saturation can been seen outside of studies using an explicitly grounded theory approach.

The general inductive approach advanced by Thomas (2006) is based on approaches "that primarily use *detailed readings* (emphasis added) of raw data to derive concepts, themes, or a model through interpretations made from the raw data by an evaluator or researcher" (p. 238). The phrase "detailed readings" connotes to us the type of reading suggested by Adler (1964) and incorporating the type of critical thinking described by Bloom et al. (1956) that we discussed previously. Based on this conceptual framework, we next discuss how NVivo can be used to analyze qualitative data using the general inductive approach advanced by Thomas.

What follows is a demonstration of the "new" components of our argument; namely how to use NVivo using a generic approach and encapsulated by an overall view of research as critical thinking in order to make sense of qualitative data.

Generic Data Analysis using NVivo

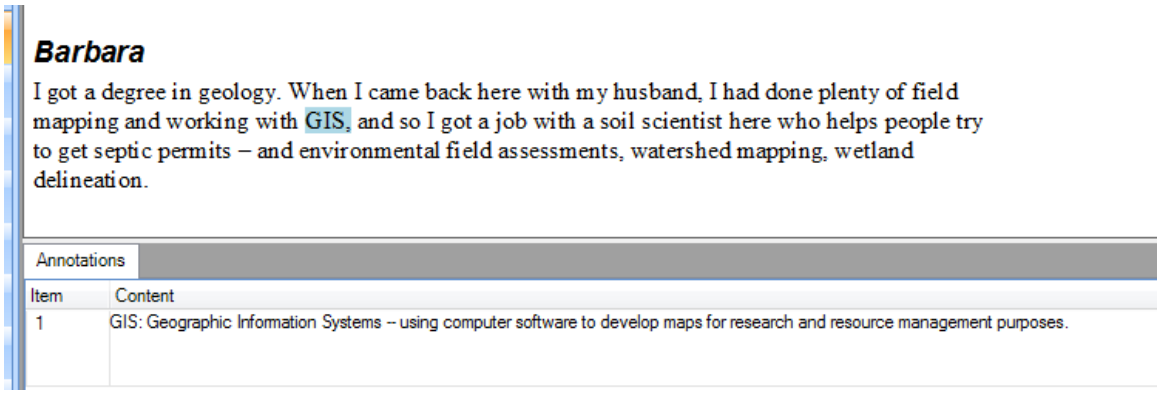
Creswell (2013) when beginning his discussion on the use of computers in qualitative data analysis writes that –

> The process used for qualitative data analysis is the same for hand coding or using a computer: the inquirer identifies a text segment or image segment, assigns a code label, searches through the database for all text segments that have the same code label, and develops a printout of these text segments for the code. In this process the researcher, not the computer program, does the coding and categorizing. (p. 201)

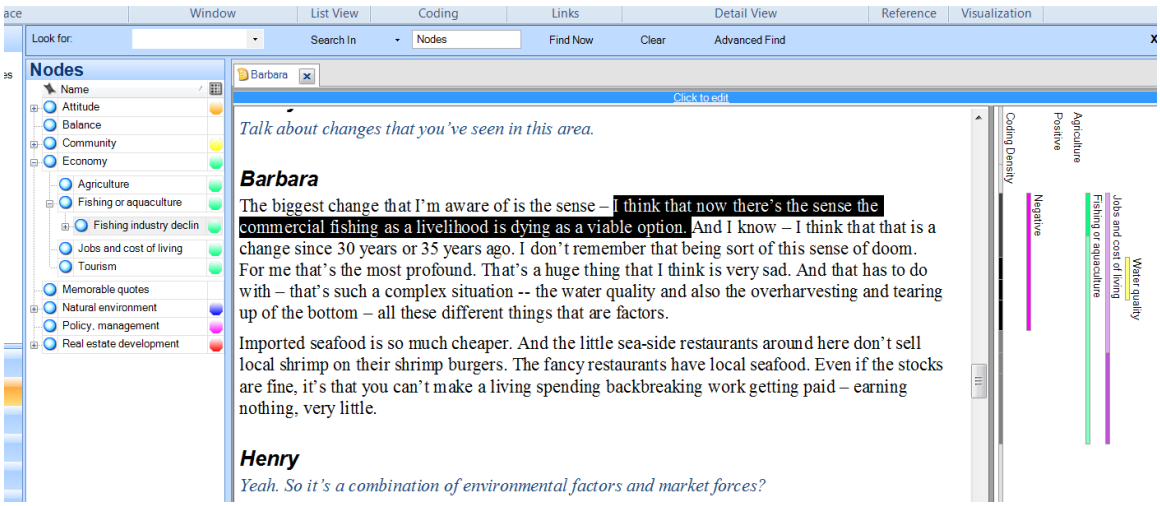
Trying to use technology can be a challenging and humbling experience and using it for qualitative data analysis is arguably more difficult than quantitative analysis using software such as SPSS. However, we think that part of the challenge is caused by not having a clear rationale for deciding what features of the software to use, how to use them, and in what sequence. In fact, it is the methodological approach, whether the "three C's" or a more formal grounded theory, phenomenological, or some other, that guides the researcher in making use of the software. Here, we illustrate how the generic approach guides the use of the software to transform raw data (text, auditory, visual) into more meaningful segments and concepts that respond to the questions posed in a study.

Each phase of the generic coding process described by Thomas can be embodied in an NVivo project. While many more features might be discussed in the context of a generic, inductive analysis process, we share a few examples here.

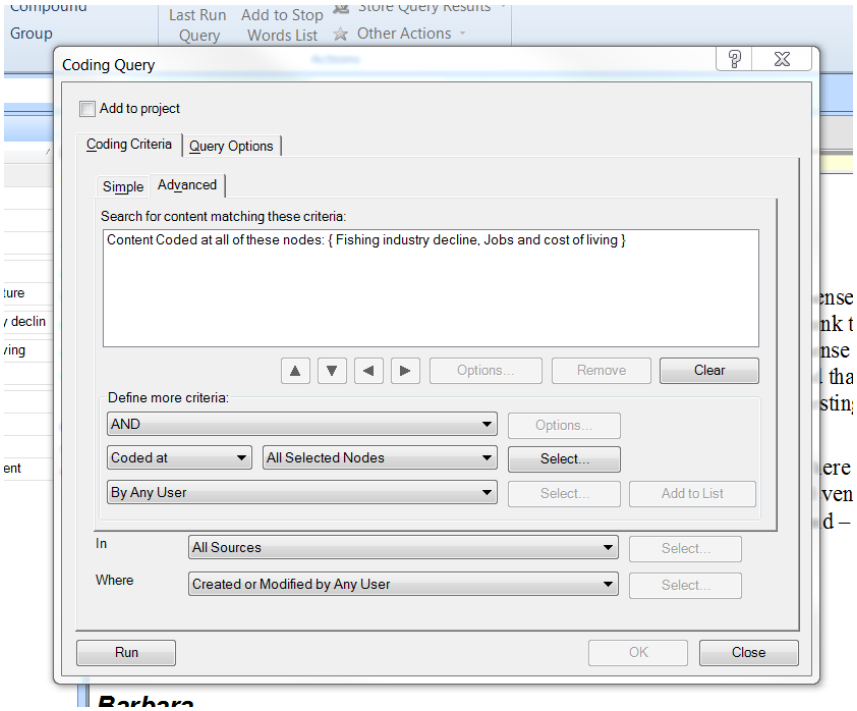
Beginning with an initial close reading of text data, NVivo provides tools such as Annotations and See Also Links, which allow the researcher to make notes and record observations about the data. For example, an Annotation might substitute for a handwritten margin note, recalling a researcher's reflections during the interview process or a note on interpretation. A See Also Link might record a connection between two respondents' comments where they are highly similar or notably contradictory.



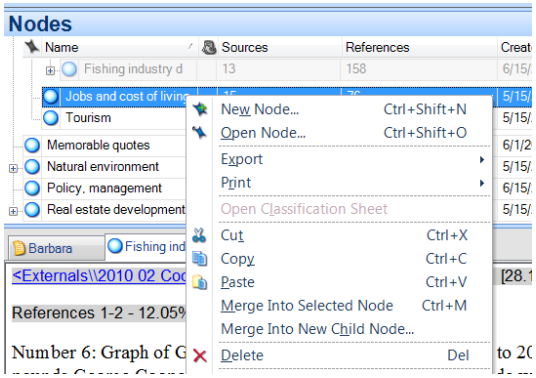
As the researcher begins to identify and label passages of text related to particular research objectives or emergent themes, Nodes are created in NVivo to represent each of these as a code. Nodes serve two simultaneous purposes – marking the associated passages in the text just as we would in a manual analysis, and also gathering the passages across text sources so that these can be viewed together. The researcher can thus easily move between viewing the content in the context of the original source, and in the context of related passages from other sources.



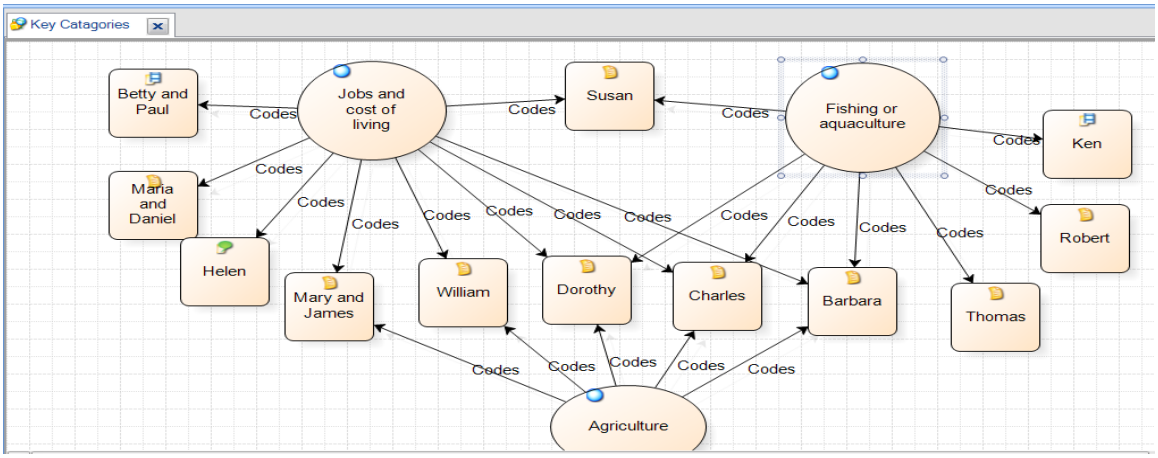
As the researcher moves toward reduction of codes into categories, or building categories into concepts, query tools allow the identification of overlaps and discrepancies in content.



Nodes may be organized into hierarchies, and hierarchies may be modified. Similar or redundant codes may be merged.



Where Thomas (2006) calls for creating a "model" (p. 242) displaying key categories and concepts, NVivo provides a Model tool with which the researcher can display patterns in the data and conceptual relationships.



It is important to note that these tools are not intended to be used in a linear sequence. Just as the coding process is iterative, the process of coding, querying, modifying node structures, and exploring relationships – whether through models or through memos or other processes – is likely to be iterative. Further, these tools are designed to be highly flexible. The researcher has the freedom to apply these tools to many analytical tasks, and the and the responsibility of determining how best to do so.

References

Adler, M. (1964). *How to read a book*. New York, NY: Simon and Schuster.

American Psychological Association. (2010). Publication manual of the American Psychological Association (6th ed.). Washington, DC: Author.

Anderson, L.W., & Krathwohl, D. R. (Eds.). (2001). *A taxonomy for learning, teaching, and assessing: A revision of Bloom's taxonomy of educational objectives*. New York, NY: Longman.

Bloom, B., Engelhart, M., Furst, E., Hill, W., & Krathwohl, D. (1956). *Taxonomy of educational objectives.* New York, NY: David McKay Company, Inc.

Creswell, J. W. (2013). *Qualitative inquiry & research design: Choosing among five approaches* (3rd ed.). Los Angeles, CA: Sage.

Lichtman, M. (2013). *Qualitative research in education: A user's guide* (3rd ed.). Los Angeles, CA: Sage.

Polanyi, M. (1958). *Personal knowledge*. New York, NY: Harper & Row.

Saldaña, J. (2009). *The coding manual for qualitative researchers*. London, UK: Sage.

Thomas, D. R. (2006). A general inductive approach for analyzing qualitative evaluation data. *American Journal of Evaluation*, *27*(2), 237-246.

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