The Wow Factor

Preconceptions and Expectations for Data Analysis Software in Qualitative Research

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Discussions on computer-assisted qualitative data analysis software often begin with the assumption that research will automatically be improved through the use of such software. Consequently, reviews frequently focus on practical concerns with the various software packages. Rather than theoretical considerations of its suitability to the method of analysis, such descriptions frequently treat software as the method of analysis. The following article calls for a clearer understanding of the role of software within research, with critical evaluation focusing on the methodological issues surrounding software use, as well on its technological innovations. The authors examine a number of factors that foster a tendency toward uncritical appraisal—including unrealistic expectations of the software as a methodology in itself; the treatment of qualitative analysis as a single, homogenized category; and the use of grounded theory as a legitimating link between tool and method.

Keywords: qualitative research; theory; grounded theory; CAQDAS; computer

The following article is based on an overview of the literature on qualitative computer software programs and the expectations encouraged by many such reviews. We examine a number of the factors that contribute to assumptions that the software is adequate as a method of analysis in itself, and the implications that these beliefs have for the research environment as a whole. Our overall aim is to stimulate debate on issues seldom discussed at length in this area, and in doing so make a number of (perhaps) controversial suggestions about why this might be so, and what can be done to encourage a more lively appraisal of computer software use in qualitative research.

Our 2-year research project[1] is in the process of investigating methods for the analysis of media content. This includes evaluating the contradictions and compatibilities between various approaches, and involves, among other considerations, examining the main qualitative computer software programs,[2] and the value of these as methodological tools to assist different methods of analysis within the social sciences.

Although the social science research environment in general cultivates a dynamic climate in which the analytical assessment of theories and methods of research abound, very few articles discuss the use of computer-assisted qualitative data analysis software (CAQDAS) in their studies, and those that do so are remarkably uncritical in their appraisals (Weaver & Atkinson, 1995). In an examination of the *Sociological Abstracts* database, we found only 31 references to either Nud*ist, Atlas.ti, NVivo, winMAX, Kwalitan, MAXqda, Qualrus, or Hyperresearch since 1990, compared to 220 references to SPSS, SAS, and Stata. Seven of

Social Science Computer Review, Vol. 22 No. 2, Summer 2004 179-186
DOI: 10.1177/0894439303262625

these articles were not primarily concerned with CAQDAS, with the other 24 discussing advantages and disadvantages of the software. Ten of these articles were written by developers themselves. In contrast, the majority of abstracts mentioning statistical packages focused on substantive research.

Lyn Richards (2002, p .263) explored possible reasons why, despite a widespread adoption of qualitative computing, there is little debate over the software's "methodological innovations." Because developers tend to focus on the technological capabilities of the software, researchers with little understanding of social science methodology take it for granted that whatever work is needed to legitimate a methodological tool has already been done. This can create an often uncritical allegiance to CAQDAS (Thompson, 2002; also see Bong, 2002), with "the very name of the computer program" seen as "sufficient in itself to justify the way the data are analyzed " (Thompson, 2002, para. 7.41).

The following discussion proposes that, to stimulate critical debate within the area, the wow factor of CAQDAS needs to be deconstructed, with its contribution to research demystified and clarified. What we term the wow factor is an unrealistically high level of expectation about CAQDAS use. These beliefs are reinforced in a number of ways, including reviews that herald the software programs as the only way forward for qualitative research. This, linked with the researcher's basic uncertainty over what the software can and cannot do (Crowley, Harré, & Tagg, 2002), the complexity of the software program, the time and the difficulty involved in learning how to operate it (see Thompson, 2002), and the confusing use of program-specific technical language in descriptions of the software's various functions contribute to a climate in which the researcher can be misled into thinking of CAQDAS as more than a methodological tool. The wow factor is reflected in an assumption that the software is the methodology, and that by simply learning to operate the program, the researcher is doing analysis.

CAQDAS

For those involved in the development and promotion of computer software, the issue is not whether to use CAQDAS, but how it should be used. Developers see their work as crucial to the social sciences and promote it as such. In his guide to qualitative data analysis for social scientists, Ian Dey (1993, p. xi), the author of Hypersoft, stated that the "days of scissors and paste are over" for researchers; QSR's Lyn Richards (1995, p. 105) declared that "all researchers working in the qualitative mode will be clearly helped by some computer software." Those involved in CAQDAS training also treat it as a prerequisite; for example, CAQDAS trainer Diógenes Carvajal (2002, p. 1) asserted that "almost everybody" now uses computer software, and that "today, the use of software to assist qualitative analysis is a must."

For researchers considering how qualitative data analysis software might transform the analytical process, and looking for a balance of views in the literature, serious critiques are thin on the ground. Most discussions on CAQDAS begin with the assumption that any research will be enhanced by using computer software in qualitative analysis (also see Bourdon, 2002; Buston, 1997; Smith & Hesse-Biber, 1996). Many of these texts are practical guides aimed at helping researchers to choose the right package and showing how various functions are employed in data management. As mentioned, a number of authors discuss their own software (also see Muhr, 2000; Seidel, Kjolseth, & Seymour, 1988), whereas others provide descriptive reviews of the most popular software packages (e.g., Alexa & Zuell, 1999; Weitzman & Miles, 1995). Individual articles often consist of a summary of one or more programs (e.g., Barry, 1998; DeNardo & Levers, 2002; Wikander, 2000) or a detailed

account of using CAQDAS within an individual project (Bong, 2002; Bourdon, 2002; Buston, 1997).

Although such reviews may be useful, an overabundance of practical descriptions on how to operate the qualitative software preempt first-stage discussions on whether it is appropriate to use it at all and do little to encourage debate over anything but the utility of functions.

QUALITATIVE ANALYSIS

Because of the mystique surrounding CAQDAS (Crowley et al., 2002), perpetuated by a constant flow of new, updated, and "improved" software programs (Barry, 1998, para. 3.1), there is understandable confusion among researchers about what the software can do and the extent to which its functions constitute analysis. Indeed, there is a misconception among some researchers that analysis is achieved simply by organizing the data into hierarchical categories within the software program (Carvajal, 2002; Crowley et al., 2002; Thompson, 2002). This misunderstanding can be the result both of a lack of knowledge on the part of the researcher about research methods in general and lack of precision in literature that describes the software as analytical.

According to Nigel Fielding (2000, p. 9), many researchers using CAQDAS have little training in social science methods. Quoting an earlier estimate from the CAQDAS Networking Project (see Fielding & Lee, 2000), Fielding stated that 15% to 20% of participants involved in software training programs are nonacademics with little or no social science background. For users with less experience of the diversity of qualitative methods, texts describing CAQDAS as a method can perpetuate misunderstandings about the extent to which software functions produce analysis. Giving the widely cited handbook by Denzin and Lincoln (1994) as his example, Fielding (2000) argued that

> contemporary methodological literature could even be taken as suggesting that academic social scientists regard qualitative software as a *separate kind of analysis* [emphasis added]. (p. 6)

For the author, this characterization is unsatisfactory "both because it exaggerates the coherence of a field which actually provides a variety of types of computer support for qualitative data analysis and because it confuses a technical resource with an analytic approach" (Fielding, 2000, p. 6).

The social sciences are well served with literature on qualitative methods (e.g., Bannister, Burman, Parker, Taylor, & Tindall, 1994; Coffey & Atkinson, 1996; Denzin & Lincoln, 1994), as well as a number of good texts on the use of computers in qualitative data analysis (Dey, 1993; Fielding & Lee, 1991; Tesch, 1990), most of which attend to the variety of methods within qualitative analysis. As Bannister et al. (1994) reminded us,

> there is no single qualitative method, and quite different aims will be accomplished by different interpretative approaches. (p. 3)

Despite this, however, there is a tendency within descriptive accounts of the value of CAQDAS to gloss over what is meant by the term *qualitative*. There is an assumption within projects using computer software programs that at least one of the packages reviewed will help any qualitative study, with, in many cases, qualitative analysis treated as a kind of homogenized, ideal-type version of research (see Coffey, Holbrook, & Atkinson, 1996). Although, of course, many qualitative methods are clearly not homogenous, posing different theoretical questions and operating within different theoretical frameworks, as a vague

description, qualitative analysis becomes the polar opposite of quantitative analysis (e.g., Bourdon, 2002), with the "furthering of analysis" (p. 18) reliant on the researcher's knowledge of the scope of the software program.

In a very general way, this is how it might seem it should be, with analysis enhanced by the abilities of the researcher to work well within the chosen discipline. However, we can see how such descriptions also create the impression that analysis is actually done by the software. Here, the wow factor kicks in—rather than emphasizing that CAQDAS is a tool for organizing data (Coffey et al., 1996; Gilbert, 2002; Kelle, 1997), not a method of analysis, this view implies that the better the researcher is at working the program, the better the analysis.

Not only do many studies treat qualitative analysis as a consolidated single method, some (e.g., Bazeley, 2002) argue for a fusion of qualitative and quantitative analyses. Such descriptions effectively package quantitative and qualitative methods as two not dissimilar categories—one that turns data into statistics and the other that turns data into descriptive codes. Not only are the methodologies treated as but two research methods, one qualitative and the other quantitative, the boundaries are further blurred by suggesting that these methods—traditionally viewed as approaching the world from a very different set of understandings (Roberts & Wilson, 2002)—are compatible enough to be mixed together.

This theoretical vagueness, in which qualitative and quantitative methods are mixed together and used on an ad hoc basis, enables CAQDAS to be placed within the category of qualitative analysis, while extolling the virtues of a kind of quali-quanti analysis.

GROUNDED THEORY

Such descriptions often avoid assessing the software for its suitability as a tool from a particular theoretical perspective. Theory, if mentioned at all, will more often than not involve a brief description of grounded theory, particularly in comparison to descriptions of the operational functions of the software.

Controversially, although not implausibly, Jörg Strübing (2002, p. 319) suggested that researchers who cannot present a good, clear methodological framework tend to "legitimize" their findings by mentioning grounded theory. Some pay lip service to the method but then go on to admit that their study departs from its theoretical framework. Sylvain Bourdon (2002, p. 17), for example, situated his study within grounded theory but then admitted that his own method of analysis is more of a "broad sorting" of data than the kind of analysis more usually set out within this approach.

In an overview of the literature connecting CAQDAS to method, we examined the archives of QUAL-software, a mailing list that is dedicated to the discussion of CAQDAS.[3] All archived postings, as well as all web pages that were referenced in these postings, were downloaded, yielding a total of 9,284 documents. These files were subsequently searched for the occurrence of keywords associated with certain qualitative methods (discourse analysis, ethnography, frame analysis, and grounded theory); an approach intersecting qualitative and quantitative methodology (network analysis); and a quantitative method (regression analysis). To see whether a certain methodology is under- or overrepresented in a CAQDAS research, we compared frequency counts to the same keyword search results for all post-1989 journal articles in the *Sociological Abstracts* database (see Table 1).

The findings unanimously show that grounded theory is the dominant methodology for CAQDAS users—who mention it on average 30 times more frequently than sociologists as a whole. Discourse analysis and frame analysis are less frequent in CAQDAS research than in

TABLE 1
Results of Examination of QUAL-software Archives and *Sociological Abstracts* Database

	QUAL Software[a]		Sociological Abstracts[b]		
Keyword	n	*%*	n	*%*	*Ratio*
Grounded theory	380	4.09	228	0.14	29.94
Network analysis	95	1.02	770	0.46	2.22
Discourse analysis	79	0.85	1,812	1.09	0.78
Ethnograph$[c]	186	2.00	4,566	2.74	0.73
Frame analysis	1	0.01	172	0.10	0.10
Regression analysis	3	0.03	1,378	0.83	0.04

NOTE: • $X^2_5 = 2{,}384$, significant at the $p < .0001$ level.
a. Comprising 9,284 files.
b. Comprising 167,757 records.
c. The $ sign is a placeholder for any letter character, such as in "ethnography" or "ethnographic." We added this condition to filter for hits on the Ethnograph software.

sociological research in general, with grounded theory mentioned 300 times more frequently than frame analysis.

Grounded theory is, however, an ambiguous methodology, which, with its tendency toward positivism,[4] can further confuse the theory with the methodological tool for the CAQDAS user. Although it is now a deeply internally divided discipline (Strübing, 2002, p. 320), according to its proponents, this methodology treats theory as derived from a process of comparisons, from, for example, interview data, conversations, observation, and even surveys (Glaser, 2002; Glaser & Strauss, 1967; Strauss & Corbin, 1990, 1997). Although there are no initial hypotheses, the researcher is engaged in a continuous search for evidence to disprove the research findings and to support the final conclusions. However, unlike a number of other qualitative methods, the analysis is not structured by the method but comes out of a process of coding, conceptualization, and categorization (Allan, 2003).

It should be emphasized that other qualitative methodologies and epistemologies caution precisely against such research practices. For example, in ethnography, it is commonplace to warn against "going native" (e.g., Hammersley & Atkinson 1983, p. 100), and most constructionism, not to mention deconstructionism, discourages the emergence of theoretical concept from data (e.g., Luhmann, 1990, p. 20)—as does critical theory, which regards inductive theorizing as an anathema (Habermas, 1963/1989). Glaser (2002, p. 7) is aware of these approaches and argued that grounded theory does not require "personal distance for accuracy" because it "automatically . . . transcends the descriptive data."

The argument here, however, is not whether the reviewer's subsequent analysis faithfully resides within the remits of grounded theory, or any other theoretical framework, but rather that such descriptions—the initial location of the new-kid software program within the old-boy tradition of an established theoretical method—work to legitimate the study as qualitative research and the subsequent sorting and coding as qualitative analysis.

A further legitimation lies within descriptions of the software functions as "theory building" (see Lonkila, 1995; Richards & Richards, 1991, 1994). The term evokes an image of an active process, rather than a mechanical function, from which, as with grounded theory, theory will emerge. Implicated in such descriptions is the notion that theory is something that develops alongside the analysis rather than the traditional expectation within

qualita tive analysis that analysis is guided by specific theoretical underpinnings (MacMillan & McLachlan, 1999).

Rather than clarifying the role of software programs, the promotion of a theory-building function, and a discursive link with the tenets of grounded theory, contributes to the myth that qualitative software, in conjunction with grounded theory, is a method of analysis in itself.

A tendency toward epistemological positivism provides conditions for further misunderstandings around the software's capabilities by substituting methodological rigor for descriptions of a particular aspect of the research process. Rigor is treated not as the product of concise conceptual thought, ideas, and examination of research materials within a particular research framework but as something provided by a software tool able to produce replicable data sets.

CONCLUSION

As we have shown, misunderstandings exist, not only in software use but also in descriptions of qualitative analysis, with little attention paid to different research methods. By questioning grounded theory as representative of qualitative methods, and by examining the tendency to link it with CAQDAS, we aim to stimulate CAQDAS users into considering the method of analysis before the software tool and before the research process begins.

There are concerns among developers themselves about misunderstandings and misuse of software programs in qualitative analysis, and a general agreement that problems do occur. Some developers encourage caution in promoting software use, whereas others see education and better training as the main solution (see Carvajal, 2002; Dey, 1993; Richards, 1995).

There is, however, clearly a need for more than practical training. Reviews that continue to focus on discussions between developers of software programs and their followers, rather than addressing "the higher literature of methods" (Richards, 2002, pp. 265-266), stifle debate. To encourage the critical assessment of CAQDAS use within qualitative analysis, the software should be reviewed within the epistemological framework of the qualitative research method chosen to suit the study. This reasserts the role of theory in research, in which research questions are defined not by the software tool but by the problems to be examined.

NOTES

1. The Assessment and Development of New Methods for the Analysis of Media Content project (www.lboro.ac.uk/research/mmethods/; award no. H333250014) is funded by the ESRC Research Methods Programme.

2. Our evaluation includes Atlas.ti, Concordance, Ethnograph, Maxqda, Nvivo, N6, Qualrus, and Textquest.

3. From www.jiscmail.ac.uk/lists/qual-software.html, accessed November 4, 2003.

4. We refer here to an epistemological positivism, which prescribes the emergence of theory from data and excludes prior theorizing.

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