

Coffey, A., Holbrook, B. and Atkinson, P. (1996) 'Qualitative Data Analysis: Technologies and Representations', *Sociological Research Online*, vol. 1, no. 1, <<http://www.socresonline.org.uk/socresonline/1/1/4.html>>

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Qualitative Data Analysis: Technologies and Representations

by Amanda Coffey, Beverley Holbrook and Paul Atkinson
School of Social and Administrative Studies, University of Wales, Cardiff

Received: 20/12/95 Accepted: 1/3/96 Published: 29/3/96

◆ Abstract

In this paper we address a number of contemporary themes concerning the analysis of qualitative data and the ethnographic representation of social realities. A contrast is drawn. On the one hand, a diversity of representational modes and devices is currently celebrated, in response to various critiques of conventional ethnographic representation. On the other hand, the widespread influence of computer-assisted qualitative data analysis is promoting convergence on a uniform mode of data analysis and representation (often justified with reference to grounded theory). We note the ironic contrast between these two tendencies, the heterodox and the orthodox, in contemporary qualitative research. We go on to suggest that there exist alternatives that reflect both the diversity of representational approaches, and the broader possibilities of contemporary computing. We identify the technical and intellectual possibilities of hypertext software as offering just one such synthesis.

Keywords:

Computer Software; Ethnography; Hypertext; Postmodernism; Qualitative Research; Representation; Rhetoric

◆ Introduction

1.1 The postmodern turn in ethnography, and in the social sciences more generally, has inspired commentators to identify and to explore a range of ways to report and represent the social or the cultural. In recent years there has emerged a dual process of destabilization: taken-for-granted categories and methods of data collection have become problematic; so have taken-for-granted methods of representing the outcomes of social research. In the course of this

1- Ethnography
2- Technology
3- Culture

discussion, we explore some aspects of this diversity and their consequences. We do not, incidentally, believe that it is necessary to endorse the rhetoric and the most extreme formulations of postmodern inquiry in order to take seriously the issues we discuss. Indeed, we believe that although the postmodernist turn has often provided the inspiration, earlier, more classical, versions of sociological or anthropological understanding furnish justifications for the exploration of ethnographic representation.

- 1.2 Current perspectives on ethnographic and cultural research can be characterized in terms of variety. The methodological domain is marked by a clamour of styles and justifications. Not only is there diversity, there are also subversive and transgressive tendencies. We cannot think only in terms of contrast and complementarity in research methods and strategies: we must think also in terms of contested approaches to social and cultural research. Contemporary ethnography certainly cannot be seen as an unproblematic set of procedures for data collection. Indeed, it cannot be seen as a purely methodological category. The ethnographic enterprise now carries with it connotations of theoretical, epistemological and ethical controversy. We cannot remain innocent about the methods of data collection for social and cultural exploration, or the methods we use to reconstruct and represent social worlds.
- 1.3 The once stable category of ethnography, a well-established approach to social research in anthropology and some schools of sociology (such as symbolic interactionism), has recently undergone a process of fragmentation. Centrifugal forces have given rise to a multiplicity of standpoints. One can now identify an almost carnivalesque variety of approaches, sometimes inspired by a departure from former analytic traditions. While the sources of that polymorphous diversity should not be reduced to a simple list of 'issues', one can recognize the interplay of poststructuralism, postmodernism, feminism and postcolonialism. Throughout those various standpoints runs a discursive turn, treating as central but problematic the relations of language, knowledge and power. Many of these perspectives indeed give rise to analyses that render ethnography itself, at least in any conventional mode, highly problematic, if not all-but-impossible.



Comment: Lee & Fielding

- 1.4 There are, then, tendencies to make the ethnographic enterprise increasingly problematic. We discuss those tendencies in more detail later in this paper. We contrast them with a countervailing tendency in contemporary ethnographic research. In contrast to the centrifugal, fragmentary movement alluded to, there is a centripetal tendency: that is, a convergence, endorsed by some qualitative researchers and methodologists, towards a single ideal-type of data collection, storage and analysis. That model combines computing techniques with methodological perspectives claimed to be associated with 'grounded theory'. One can detect a trend towards a homogenization, and the emergence of a new form of orthodoxy, especially at the level of data management. We note that the use of microcomputing strategies for qualitative data handling has become widespread, and this includes an almost globalizing process within the research community. The presuppositions and procedures that are inscribed in contemporary software for qualitative data analysis are implicitly driving a renewed orthodoxy that is being adopted in a large number of research sites around the world. In a subsequent section of this paper, therefore, we review some aspects of this emergent orthodoxy. This is not a comprehensive review of that particular field of methodological development. For the purposes of this paper, we focus on the commonalities and analytic implications of such data-handling

techniques.



Comment: Lee & Fielding

- 1.5 We contrast those two general tendencies not in order to judge between them. Here we are not concerned primarily with evaluating all the contemporary models, not to advocate one or other approach in itself. We follow the approach we adopt in order to lay out and explore this one major tension or paradox within current methodological discourse and practice.
- 1.6 In the third part of this paper we explore briefly the implication another, third, strategy that provides a degree of synthesis between our contrasted ideal types.

◆ **Contestation and the Ethnographic Representation of Culture**

- 2.1 Contemporary debates over the ethnographic representation of cultural phenomena have concentrated on the textual construction of reality (Atkinson, 1990, 1996). Emerging most starkly within the discipline of anthropology, such debates have now spread to sociology and the ethnographic endeavour in general. At the centre of such debates is the critical appraisal of ethnographic writing and the social production of the ethnographic text.
- 2.2 Traditionally, the professional and academic status passage has been completed and confirmed by the construction of a major text. The anthropological monograph, therefore, was the culmination of the ethnography and the legitimizing mark of the anthropologist. The relationships between fieldwork, text production and the discipline of anthropology have, then, developed over time. The anthropologist was identified with his or her people, who in turn were identified with and in the ethnography. The ethnographic monograph thus became the embodiment of the discipline itself and the identifier of its practitioners. Within the classical period of British and American anthropology the ethnographic monograph enshrined a series of standardized representations of societies and (by implication) of their authors (Boon, 1982). There are, of course, other modes of ethnographic representation, including film; they are as conventional and artful as any written text (cf. Crawford and Turton, 1992; Loizos, 1993).
- 2.3 Given the importance of the ethnography as textual product it is little wonder that radical assaults on its status should strike at the roots of the discipline. Thus in recent years, anthropology - once so stable - has experienced a 'crisis of representation'. The textual foundations have been shaken and, along with them, the intellectual faith that informed their production and reception. The status of ethnographic texts has also come under scrutiny from within sociology (Atkinson, 1990, 1992; Hammersley, 1992). In many ways this has proved a less critical issue for sociology than for anthropology, not least because ethnographic methods and monographs are much less central to sociology as a whole. Important though qualitative research is in many fields of empirical sociology, it does not underpin the entire academic enterprise as it does for anthropology. The critiques of ethnography in sociology have sometimes followed directions similar to those in anthropology (see Hastrup, 1992; Richardson, 1994). Several of the positions which have contributed to such critiques have been associated with the general thrust of postmodernism. Postmodernism in general has certainly contributed to reappraisals of cultural representation, in the human sciences and beyond. It should also be acknowledged that recent developments are not dependent on postmodernism per se. Many of the current tendencies can be understood as developments of anthropology and sociological

perspectives, rather than radical departures from them.

- 2.4 It is possible to identify a number of contributions to the contestation of ethnographic representation, and a number of trends which have emerged out of such claims. For the purposes of this paper we concentrate on just some of these.

◆ Rhetoric

- 3.1 The weakening of cultural (and indeed) disciplinary boundaries has been spurred by a movement which we might usefully call the 'rediscovery of rhetoric'. Rhetoric is no longer consigned to the margins of legitimate scholarship. It has more recently been recognized as central to scholarly work and production. The classical theory and practice of rhetoric was concerned with argumentation and persuasion. The separation of rhetoric and science at the Enlightenment implied a radical distinction between two contrasted sets of commitments. On the one side stand together science, reason, logic, methods and evidence. On the other side are ranged rhetoric, persuasion, opinion and ornamentation. The aspirations of modern scholarship were firmly rooted in such dualities. The separation of rhetoric from logic in the creation of modern disciplinary knowledge parallels a number of other, equally fundamental, separations and dichotomies. It established the possibility of an observer armed with a *neutral* language of observation (since untouched with rhetoric) and thus allowed for the elementary distinction between that observer and the observed. The rediscovery of rhetoric creates the possibility of removing such distinctions: of removing the distance between the subjects and objects of inquiry, and questioning the taken-for-granted canons of science and reason. It reminds us that scientific accounts and texts have rhetorical qualities. It challenges cherished distinctions between scientific fact and textual production, or between the reality of the natural-scientific world and narrative accounts of the social world. (For other accounts of representation of the natural and social, see: Bazerman, 1988; Myers, 1990; Lynch and Woolgar, 1990; Lutz and Collins, 1993).
- 3.2 The work of authors such as Edward Said (1978) has placed this weakening of cultural boundaries more overtly within an ideological perspective. Said's sustained commentary on the *orientalism* of western observation has served to strengthen the case that traditional ethnographic texts have a privileging effect: that is, the cultures which have been represented have been reduced to the subjugated and muted objects of a dominating discourse. In enumerating and classifying the exotic characteristics of the oriental, then, the privileged observer has established a position of authority, which is inscribed in the texts of exploration, description and classification (Marcus, 1992). A virtually identical set of issues can be described for the encounters of the old world with the new in the conquest and appropriation of the Americas. From the earliest accounts of the Spanish conquests through to the accounts of 19th century explorers and ethnologists, the continent has been populated by others and appropriated through the accompanying representations. The texts of exploration and exploitation repeatedly inscribe the metropolitan perspective and the alterity (otherness) of the new world (Todorov, 1984; Pratt, 1992).

◆ Exoticism

- 4.1 Feminist theory and praxis has also questioned the thus far privileged position of observer-author. Here the argument has not been about the over or under representation of men and women as ethnographic authors, but rather about the relationships between feminism, gender

and ethnography at more fundamental levels. Clough (1992), for instance, articulates a feminist view, drawing on psychoanalytic perspectives. She argues that from a feminist standpoint one can see the standard realist accounts of ethnography as incorporating unconscious fantasies and desires concerning race, gender or class. Realism, she argues, suppresses those unconscious processes under the guise of factual discourse Wolf (1992) also addresses the feminist perspective on ethnography and representation. She suggests that reflexive, self-critical attitudes are particularly characteristic of feminist thought. Feminism in general encourages an examination of power and powerlessness, the mutual obligations of researcher and researched. She implies that feminist scholars were exploring these issues independently of their becoming fashionable topics among male anthropologists. As Wolf also suggests, the heightened sensibilities of feminist scholars have led directly towards problems of representation.

- 4.2 In a similar vein Mascia-Lees et al. (1989) draw attention to a concern among feminist anthropologists for modes of understanding (including writing) that do not reduce women to the position of voiceless *objects*, but treat them as subjects in their own right, entitled to their own voices. This echoes the very foundations of the feminist research process - the concern with voice and authority, accounts and experience (Smith, 1987; Olesen, 1994). This feminist strain of ethnographic critique is reminiscent of the distinction, first elaborated by Shirley and Edwin Ardener (e.g. Ardener, 1975), between dominant and muted groups. This view proposes that there are fractions of the population whose culture, or world-view, is dominant (e.g. men; upper classes; dominant ethnic groups). There are others, the dominated (e.g. women; lower classes; suppressed minorities) who are 'muted' in that they are deprived of their own culturally legitimated means of expression. Muted groups are seen - and must often see themselves - through the categories of the dominant. They are visible and audible only through the eyes or voices of the dominating groups. As a consequence, they cease to be the subjects of their own experiences and actions; they are reduced to being the objects of other subjects. They are subjugated in that sense. It is argued, therefore, by feminists and other critics of classic ethnographic discourse that the 'others' of such inquiry and such description are rendered mute. Indeed, when the objects of ethnography are already dominated (as are women, for instance) the ethnographic gaze may be in danger of performing a kind of double subjugation.
- 4.3 This rather different reading of ethnographic work does not altogether let the production of the ethnographic texts off the hook. It may be argued that such ethnographies of western urban settings partake of those 'orientalizing tendencies' identified among anthropologists studying exotic cultures. And there is some truth in that. In some quarters there may have been a condescending view of the more exotic characteristics of slums and their denizens. The 'nuts and sluts' tradition evident in studies of deviance is occasionally coloured by an orientalizing attitude towards the colourful and the bizarre. There is, perhaps, the desire to confound the staid, mainstream reader with stark contrasts of mores and material circumstances. Nevertheless, these tendencies must be set against much more enduring and pervasive commitments on the part of sociological ethnographers, for in various ways, ethnographers have been convinced of the necessity to reverse the normally taken-for-granted hierarchies of credibility, seeking to give the marginalized or the deviant a social presence. He or she is represented as a social actor endowed with the capacity for rational social action. His or her culture is treated seriously and with respect: the goal of cultural relativism is a methodological imperative for the ethnographic researcher. In other words, then, it is misleading to equate all (or indeed, any) ethnography with the worst excesses of an orientalizing gaze. There is a world of difference, in terms of intentions and outcomes, between the ethnographic enterprise on the one hand and the exploitative scrutiny of dominating and appropriating discourses on the other. Nevertheless, the problem of

representation in ethnographic texts is simultaneously moral and epistemological. Indeed, it highlights the extent to which the ethical and the methodological issues are inextricably linked.

◆ Realist Approach

- 5.1 The proper representation of social reality has therefore become contested. One major consequence of this has been critical attention to ethnographic texts. The historical and stylistic continuities with so-called realist fiction have been well documented (Krieger, 1983, 1984; Atkinson, 1992; Cappetti, 1993). Literary realism has been identified as the dominant mode of representation, implying an impersonal, all-but-invisible narrator (Van Maanen, 1988). It is presented from the point of view of one impartial author. His or her point of view is the dominant, even the sole, one. It is a genre of authoritative reportage. As a style, as a collection of literary devices, such realist writing is massively familiar in the construction of factual authoritative accounts, therefore, in danger of being taken for granted, and hence of being treated as a natural way of representing the social.
- 5.2 Despite this tendency towards a realist approach, it remains by no means clear that literary realism is the only - or even the best - way to produce accounts of varied social worlds. Indeed, as Atkinson (1983) noted, there is something of a paradox in the use of what one might call a 'straightforward' realism for ethnographic purposes, a tension between the conventions of realism and the assumption of most ethnographic work. Most ethnographers, whether sociology or anthropology be their primary discipline, recognize the complexity of social life and its collective representations. Equally, they recognize the fundamentally constitutive nature of language. That is, language use creates and constructs social reality. Interpretative anthropologists, for instance, are committed to the ideals of 'thick description', while symbolic interactionists equally endorse an interpretative sociology that places language at the heart of an essentially constructivist view of reality and representation. And yet conventional realism is founded on a very different treatment of language. Such realism has historically encouraged little or no explicit concern for the language of representation itself. Realism treats language as a taken-for-granted resource. The realism of conventional writing may therefore result in 'thin' description. Such arguments, that narratives and descriptions from a single, implicit point of view may not do justice to the complexity of cultural forms, have given rise to various alternative approaches.

◆ Complexity

- 6.1 These epitomize the diversity of more recent ethnographic work and reflect the interpretative turn in ethnographic writing and representation. Various commentators have called for texts that are more open, messy and fragmented in order to do at least two things: firstly to challenge and highlight the very conventionality of such ethnographic writing; secondly to allow for more creative and complex modes of representation (cf. Mulkay, 1985). Furthermore, while the conventionality of all modes of representation is recognized, there is a strong suggestion in such arguments that complex texts may be more faithful to the complexities and contours of social life. We have discussed elsewhere some of these alternative forms of representation (Atkinson and Coffey, 1995; Coffey and Atkinson, 1996) and so do not recapitulate them here. The sorts of alternative representational modes we have in mind include: a dialogic approach, (Dwyer, 1977, 1979; Holquist, 1990; Allan, 1994); ethno-drama or ethno-theatre (Paget, 1990; Ellis and Bochner, 1992); and poetry (Richardson, 1992). These approaches are in turn closely related to the promotion of biographical and autobiographical work in anthropology and sociology: in

particular, for the 'writing' of lives and selves (Stanley, 1992; Hastrup, 1992).

◆ Postmodernism

- 6.2 The general affinities between experimental ethnographic writing and postmodernism are clear. Postmodernism, in recognizing and celebrating the diversity of types and representations, encourages a variety of genres. It also encourages the blurring and mixing of genres. It questions the monovocal expression of authenticity in favour of polyvocal texts and the celebration of diversity. There is, therefore, much in the postmodernist movement to commend various radical re-evaluations of ethnographic writing. On the other hand, it is not necessary to appeal to postmodernism. It is arguable that the possibilities for textual experimentation are contained within the modernist movement in literature. Modern literature provides us with a multiplicity of textual formats and devices for the construction of written representations. Modernist fiction found many ways, for instance, of representing the mingling of external events and inner dialogue; of reconstructing the minutiae of extraordinarily detailed description; of linking factual reportage with the fantastic. By adopting some of these 'new' conventions and by experimenting in similar ways ethnographic, texts can also be viewed as undergoing a modernist movement.

◆ Ethnographic Data Analysis and The Computing Moment

- 7.1 On the one hand, therefore, we have a diversity of approaches to ethnography and representation; on the other it is possible to identify a different trend: towards homogeneity. An emerging orthodoxy is being adopted globally by key members of the qualitative research community. This is largely, though by no means exclusively, linked to the growth of Computer Assisted Qualitative Data Analysis Software (CAQDAS) as a subfield of expertise (Lee and Fielding, 1991). Software packages aimed at analysing qualitative data are now widespread and it is a fast-growing field. A full review of all that literature and the existing software has already been done elsewhere (Tesch, 1990; Weaver and Atkinson, 1994; Weitzman and Miles, 1994; Burgess, 1995). It is, however, important that we draw attention to the area in general, and some specific issues within it. We note, in particular, the convergence of most computer applications on a general model of data marking and retrieval. Many of the software packages may most accurately be described as computer-based applications for the storage and retrieval of data. While there are additional facilities and sophistication involved, the general notion of coding remains fundamental to such CAQDAS.
- 7.2 The computer-based approaches of this sort depend on procedures for coding the text (interview transcripts, fieldnotes, transcribed recordings, documents). This means marking the text in order to tag particular chunks or segments of that text. Codewords are thus attached to discrete stretches of data. The purpose of the software is, at root, twofold. First, it facilitates the attachment of these codes to the strips of data. Second, it allows the researcher to retrieve all instances in the data that share a code. Such code-and-retrieve approaches are exemplified in programs such as The Ethnograph, one of the most widely used of all the applications. The underlying logic of coding and searching for coded segments differs little, if at all, from that of manual techniques. There is no great conceptual advance over the indexing of typed or even manuscript notes and transcripts, or of marking them physically with code-words, coloured inks and the like. In practice the computer can add many advantages. The speed and comprehensiveness of searches is an undoubted benefit: the computer does not search the data file until it comes up with the first example that will 'do' to illustrate an argument, nor will it stop

after it has found just one or a couple of apposite quotes or vignettes. The software has an additional merit that definitely marks an advance on the practical value of manual coding and searching: it can cope with multiple and overlapping codes; it can conduct multiple searches, using more than one codeword simultaneously. Software like The Ethnograph allows the analyst to combine codewords, in an approximation of Boolean logic, to facilitate complex searches. The co-occurrence of codings can be an important issue; finding them can be a useful tool. Since the software can handle very large numbers of codings and separate codewords, in purely mechanical terms the computer can help with more comprehensive and more complex code-and-retrieve tasks than can be achieved by manual techniques.

- 7.3 Many of the software packages allow the researcher to do more than just coding. Software such as The Ethnograph (version 4.0 and later), Kwalitan, NUD*IST, all permit the user to do things like attaching analytic or other memoranda to specific points in the text. The aim is to incorporate many of the key tasks of 'grounded theory' strategies within the software applications. There is, therefore, a close relationship between the processes of coding and the use of computers.
- 7.4 A similar view of the convergence of (versions of) 'grounded theory' and CAQDAS has been outlined by Lonkila (1995), who suggests that aspects of grounded theory have been over-emphasized in the development and use of qualitative data analysis software, while other approaches have been neglected in comparison. There is, therefore, a danger that researchers may be led implicitly towards the uncritical adoption of a particular set of strategies as a consequence of adopting computer-aided analysis. The emphasis on coding data is a central feature of this process of convergence. Having summarized key features of two programs (ATLAS/ti and NUD*IST), Lonkila writes:

It seems clear that the development of the two programs mentioned has been strongly influenced by grounded theory. But it does not follow from this that they can only be (or actually are) used in an analysis in line with grounded methodology. However, nearly all of the programs developed specifically for qualitative data analysis tell us: if you want to do qualitative research with the computer, you have to code your data. How you do it, is basically up to you (even if some of the programs and many of the articles written on computer-assisted qualitative data analysis suggest that the researcher get acquainted with grounded theory). It may be that at least some kind of coding is needed in most qualitative research, but it is also possible that coding is overemphasized, given the fact that a large part of the qualitative researcher's work consists of interpretation and a fine-grained hermeneutic analysis.... (1995: pp. 48-9)

- 7.5 In other words, the point is not to deny the relevance of 'grounded theory', nor the potential value of coding qualitative data. One is certainly not denying the value of CAQDAS for such work. The danger that we, endorsing Lonkila's caveats, wish to indicate, is the unnecessarily close equation of grounded theory, coding, and software. Grounded theorizing is more than coding, and software can be used to do more than code-and-retrieve textual data. The point does not concern the full potential of CAQDAS, nor the true nature of grounded theorizing; rather, the danger we identify lies in the glib association between the two, linked by an emphasis on data coding procedures.
- 7.6 It is too easy for there to develop a taken-for-granted mode of data handling. This is not

necessarily an inherent feature of software itself: it resides in the uses to which such software is put. In our view, the association of CAQDAS with a simplified 'grounded theory' justification can be misleading to students and researchers to whom it is introduced. CAQDAS offers a variety of useful ways of organizing data in order to search them, but coding data for use with computer programs is not *analysis*. It is important to avoid the misapprehension that coding and computing lend a scientific gloss to qualitative research. The growing 'respectability' of qualitative methods, together with an adherence to canons of rigour associated primarily with other research traditions, can lead to the imposition of spurious standards (Fielding and Lee, 1995). The categorization of textual data and the use of computer software to search for them appear to render the general approach akin to standardized survey or experimental design procedures. In our view qualitative research is not enhanced by poor imitations of other research styles and traditions. Analytic procedures which appear rooted in standardized, often mechanistic procedures are no substitute for genuinely 'grounded' engagement with the data throughout the whole of the research process. It is worth noting that the 'usefulness' of such computer programs implies that you have collected and input all of your data, and this suggests that data collection and data analysis are discrete and linear.



Comment: Lee & Fielding

- 7.7 There are now various evaluations of the methodological and practical value of various software applications. The general approach has spawned its own area of expertise (see Tesch, 1990; Weaver and Atkinson, 1994, 1995; Weitzman and Miles, 1994; Fielding and Lee, 1995; Stanley and Temple, 1995). Here we wish to note that many of the analytic strategies implied by code-and-retrieve procedures are tied to the specific inputting requirements of computer software strategies. As a consequence of that, there is an increasing danger of seeing coding data segments as an analytic strategy in its own right, and of seeing such an approach as the analytic strategy of choice. That should not be the case. Coding segments of text, with or without the addition of analytic memoranda to selected segments, is by no means the only way of managing and manipulating data. It is not even the only way of thinking about the use of computers for qualitative data analysis. It is, as we argue later in the paper, not even the only way of thinking about the use of computers for qualitative data analysis. The qualitative research community should not endorse the computer-based code-and-retrieve strategy as the automatic approach to management and analysis. The computer-based handling of textual data is a useful extension of the capacities of word-processing and textual data storage. The indexing or coding of text in that context is a useful heuristic approach to the data themselves.

◆ **A Possible Synthesis**

- 8.1 We have juxtaposed two alternative tendencies in the analysis and representation of ethnographic research. On the one hand we have identified a tendency towards pluralism and polyvocality. Such an approach emphasizes the variety of analytic strategies that are available, and equally emphasizes the variety of representational modes that are open to the ethnographer. This position (or collection of positions) include those associated, broadly speaking, with a postmodern sensibility. On the other hand, we have a distinctly modern tendency towards a common approach, approximating perhaps to an industry-wide 'gold-standard', based on an elementary set of assumptions and procedures for the organization and management of qualitative data. While we have recognized the heuristic value of such procedures, we have been cautious as to their general effects and consequences if widely but uncritically adopted. In this

final section of the paper we turn to consider just one possible synthesis of the two tendencies we have identified. We believe that there is a use for computing strategies in contemporary and future ethnographic work, and we believe that, unlike much of the code-and-retrieve computing, this approach represents a genuine and generic advance over manual methods of data management. We refer to the exploitation of hypertext and hypermedia techniques.

- 8.2 Hypertext has a long history, as these things go, and a wide range of applications. Here we provide a brief overview of its main characteristics and uses, with some reference to its potential value for ethnography (Nielsen, 1990) provides a useful review of early hypertext as well as summarizing various more recent developments. His summary of its story is that: 'we can say that hypertext was conceived in 1945, born in the 1960s, and slowly nurtured in the 1970s, and finally entered the real world in the 1980s with an especially rapid growth after 1985, culminating in a fully established field during 1989' (p. 41). The original programs were obviously developed for mainframe computers, but it is the rapid growth in personal computers and the wide possibilities of contemporary media that have helped to promote hypertext applications. They can now be encountered in all domains where microcomputers are to be found: in business; in education; in research; in entertainment.
- 8.3 Throughout the development of hypertext systems, there has been one guiding principle. The presentation of text is non-sequential. The normal conventions of text, printed or otherwise, determine a linear, sequential mode of presentation and processing. The reader, to paraphrase Lewis Carroll, should start at the beginning, carry on until the end is reached, and then stop. Of course, even with printed words on the page, life is not exactly as rigid as that: one may start at the middle, one may skip sections; one may cheat and read the ending first. But the text itself is fixed in its linear form. Likewise, working with files of text on computers may equally involve a linear structure. Again, one may scroll up and down, or jump from the beginning to the end, one may (as with a novel) move to a bookmark. But the processes are often essentially the same. The idea underlying hypertext is essentially different:

Hypertext presents several different options to the readers, and the individual reader determines which of them to follow at the time of reading the text. This means that the author of the text has set up a number of alternatives for readers to explore rather than a single stream of information (Nielsen, 1990: pp. 1-2).

- 8.4 Hypertext may not be an especially new idea, but it may prove to be one whose time has come. In essence, the underlying ideas are fairly simple. They are predicated on the view that the reader's relationship with a given text (such as a literary work or a work of reference) need not necessarily be restricted to the linear reading of that text in a predetermined sequence. Its approach is non-linear, more akin to browsing and following up cross-references. The hypertext software allows a reader to follow, and indeed to create, diverse pathways through a collection of textual materials. Hypertext applications thus support a much more interactive relationship between the text and its readers. Readers can, in a sense, become authors of their own reading; they are not simply the passive recipients of a determinate textual form.
- 8.5 This approach has exciting possibilities for qualitative researchers. Many people working with qualitative data, whether they use fieldnotes, interviews, oral history or documentary sources, feel frustrated by the necessity of imposing a single linear order on those materials. It is, after all, part of the rationale of ethnographic and similar approaches that the anthropologist, sociologist, historian, psychologist or whoever, recognizes the complexity of social inter-

relatedness. We recognize the over-determination of culture, in that there are multiple, densely coded influences among and between different domains and institutions. It is, therefore, part of the attraction of hypertext solutions that a sense of dense interconnectedness is preserved, enhanced even, while linearity is discarded.



Comment: Lee & Fielding

- 8.6** The basic implementation of a hypertext application is fairly simple. It is based on the idea of the 'button', which marks a point in the text (or other data) at which various functions can be performed. A 'link button' allows the user to go to another point in the data in order to make a suitable cross-reference, to pick up another instance of 'the same' occurrence, and so on. Such links join 'nodes' and the analyst can create dense webs or networks of such links, which can then be 'navigated' in various explorations of the data. By contrast, an 'expansion button' allows the analyst to attach additional text to the node. Activating a button can therefore reveal, say, an analytic memorandum about an actor or a given incident, or an explanation of a particular item of situated vocabulary. The work of analysis with a hypertext approach need never be complete: the analyst can go on creating links and adding information indefinitely. There will always be practical limitations, of course, and there are also limits placed by human cognitive capacities. There is, for instance, the possibility that is widely recognized, of becoming lost in 'hyperspace' if the whole thing becomes too complicated, and the user cannot get back to where he or she started, or cannot navigate to where she or he actually wants to be. There is a practical and cognitive cost to be borne in return for abandoning the linear printed text. Conklin (1987) provides a useful review of at least two such burdens. On the one hand he refers to the 'disorientation' experienced by some users of complex, non-linear systems. On the other hand, he identifies the 'cognitive overhead' that may be associated with dense and complicated processes of decision-making involved in the creation and tracking of hypertext linkages. The demands on authors and readers can be considerable. We do not achieve greater complexity without some further investment of concentration and imagination.
- 8.7** It is, however, apparent that once the relevant linkages and expansions have been set up, with appropriate introductory material and commentary, then the resulting hypertext can be a form of analysis. It is not necessary to recast the whole thing into a conventional, linear, printed text. Hypertext applications are authoring systems, often used to develop and deliver instructional materials. The construction of a hypertext based on systematically ordered and suitably edited qualitative data hence collapses the processes of 'analysis' and 'writing'. This is a fundamental feature of any fully developed hypertext application. Hitherto CAQDAS, whatever its particular merits, has implicitly maintained a clear separation between 'analysis' and the subsequent publication of the results of that analytic process. Hypertext applications suggest at least one major point of departure from this.
- 8.8** In other words, looked at from the other end of the process, a reader would not settle down with a book as 'the ethnography' or 'the history', but would interact with data and analytic commentary in a flexible and interactive way. Reading through introductory and explanatory text, for instance, the reader (by clicking on a button) could choose to examine relevant data in some detail, or go to other examples of the same phenomenon, or to extracts from relevant literature (more user-friendly than the average literature review!). He or she thus picks a path through a variegated collection of texts and cross-references. For this and similar reasons, it is sometimes claimed that hypertext approaches are compatible with a postmodernist approach to

texts. Be that as it may, it certainly helps to preserve a sense of complexity, intertextuality and non-linearity.

- 8.9** The implementation of such an approach to analysis and authorship is not easy. Data need to be edited - in order to preserve confidentiality and to render them comprehensible. The ethical and legal problems are considerable, for instance. When data are transformed into hard copy, then it is relatively easy to anonymize them. Likewise, when they are selectively quoted, then anonymity and confidentiality can be assured. It is usually straightforward to substitute pseudonyms and remove or falsify inessential details. When extracts from the original interview are included in sound, or when the materials include visual materials about people, settings and the like, then anonymity becomes much more problematic. Likewise, copyright of published materials to which one might wish to create hypertext linkages may impose practical limitations. Such considerations will impinge more on all researchers as multimedia applications become more widespread. Nevertheless, they should not prevent us exploring the possibilities of hypertext and hypermedia in principle.
- 8.10** Analytic and presentational work with hypertext is labour-intensive. The nodes need to be identified and the relevant links and expansions put in place. Additional materials must be entered into the database (and, as we have indicated, there may be copyright issues if that information is to do more than just reference out to the literature in the normal way). The kind of product we have in mind does not absolve the ethnographer from writing his or her theorized account, and the tasks of writing sociological or anthropological commentary must also be accomplished. The hypertext may facilitate a more flexible and more densely linked set of relationships between 'data' and 'theory', but it does not remove them. The final construction of a hypertext ethnography may thus prove a costly and time-consuming effort. On the other hand, the opportunities are potentially wide, especially when we enter the world not just of hypertext, but of hypermedia. It is possible to incorporate not just textual data, but information in other media as well. The ethnographer may look forward to a time when a reader can choose to hear extracts from interviews or other spoken data, or find video images when an expansion button is clicked on, or have a wide array of graphic images. The 'ethnography' itself might be published in hard copy, as a conventional book, but there might be another 'ethnography', consisting of an array of information stored in different media, accessed via a computer and a CD drive, through which the professional social scientist and the student or lay reader could navigate pathways and pick up information appropriate to their respective interests and levels of sophistication. The systems and software all exist now, and qualitative researchers are starting to exploit them. Predictions in this area are often doomed to failure, and one would be foolish to try to second guess how and to what extent they will be taken up. There is no need to assume that all future ethnographers will become 'cyberpunks', any more than one need predict that fate for all literary critics, even though the same opportunities exist in the humanities, and indeed are rather more advanced there than in sociology or anthropology. It is, however, worth noting that 1995 saw the publication of what was claimed to be the first anthropological monograph to be accompanied by an interactive compact disc (CD-i) (Kersenboom, 1995).
- 8.11** Kersenboom's major work remains embodied within a conventional, linear monograph, and the CD-i element is explicitly illustrative. Nevertheless, she argues forcefully for the further exploitation of such representational possibilities. Her rationale for exploiting contemporary information technology, at least as an adjunct to a printed version, is that: 'With the advent of CD-i anthropological and linguistic fieldwork are offered a chance to represent their data, which depend on word, sound and image as their existential condition, as well as their analyses, in one

comprehensive exteriorized form' (p. xvii). Her empirical work is focused on Tamil oral performance, and she argues that we need multiple modes of representation (written, visual, musical, spoken) in order to appreciate the full complexity of such cultural forms. In precisely the same way, we suggest that the possibilities of hypertext and hypermedia will allow the ethnographer to reconstruct social worlds through multiple representations. The ethnographer will not be confronted with the present either/or decisions (contrasting conventional realist and alternative literary forms, for instance) as they will be able to coexist. Likewise, the simultaneous availability of written text (including the ethnographer's own interpretations and commentary), visual and sound data will permit the reader to explore alternative, and complementary modes of representation.

◆ Conclusion

- 9.1 In order to convey the spirit of our proposals, we can hypothesize the re-casting of recent research at Cardiff in hypertext/hypermedia format. We have undertaken a number of linked studies of the social contexts and consequences of the new genetics (e.g. Parsons and Atkinson, 1993). Our data include taped interviews with women in families with Duchenne Muscular Dystrophy, recordings of clinical conferences between clinicians and laboratory scientists, and contextual data about families, geneticists, genetic science and the like. In a hypertext format, not only can we construct analytic links and pathways between relevant points in the data, or between data and sociological analysis, but we can also construct expansion links so that family trees can be accessed, annotated with scientists' estimates of carrier risk and our informants' estimates of their own and others' risks. We can annotate scientific, clinical and lay accounts of genetics and risk, and make cross-references between them. We can create links to relevant extracts of comparative literature (on risk, on scientific knowledge) and incorporate our own sociological analyses. We can use the possibilities of hypermedia to link not just transcripts of data, but also to incorporate data in their original forms: reproductions of laboratory artefacts, sound-extracts from original interviews, and pictures of our informants. We can experiment with 'alternative' literary forms, such as ethno-drama reconstructions of genetic scientists' decision-making processes, juxtaposed with lay persons' reproductive decision-making. We can engage in such experimentation simultaneously with the construction of more conventional realist accounts, and link both with explicit sociological analysis. The purpose is not to abandon altogether established modes of analysis, thought and representation. Rather, we can use the possibilities of information technology to help create the flexible modes of data analysis and reality-reconstruction that most contemporary ethnographers would endorse in principle.
- 9.2 We do not believe that all ethnographers should become users and navigators of hypertext and hypermedia systems now or in the near future. We do believe, however, that such applications deserve much more serious and systematic attention on the part of qualitative researchers than they have received hitherto. Indeed, it is the case that multimedia, interactive materials are now widely distributed commercially. Our point is not to claim that there is something uniquely sociological or anthropological in the use of such applications. On the contrary, it is the recognition that these modes of representation are becoming commonplace that leads us towards these observations. It is for the same reasons that we are sceptical about ethnographers using software in order to recapitulate existing modes of analysis and representation, rather than exploring more fundamental innovations.
- 9.3 It is not necessary to endorse all the criticisms of postmodernists, feminists and postcolonialist critics in order to recognize the value of research and representations that allow for a plurality

of analyses and interpretations. Likewise, it is not necessary to subscribe to the most extreme versions of textualism in ethnography to recognize that there is room for representations that are more open and more complex than are conventional ethnographic texts. We do not fall into the trap of thinking that hypertext is the embodiment of postmodernism, nor that it solves all the problems posed by critics of conventional ethnographic epistemology. We do, however, believe that the tasks of cultural exploration and representation will be invigorated by the systematic exploitation of such approaches. Indeed, we believe that in the near future, when virtual reality systems, global information links and the like will be commonplace, the traditional ethnographer, reliant on written texts for the primary means of representation and grounded in realist prose, could well seem like a dreadful anachronism.

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