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The Digital Ethnographer

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Abstract

Hypermedia offers ethnographers a powerful new medium for authoring. Its potentialities suggest various levels of convergence with the concerns of critical theory and post-paradigm ethnography. Nevertheless, the project of authoring academic ethnographic hypertexts is fraught with difficulty, not least due to the difficulties of formulating a new rhetorics which can offer the same persuasive power as the conventional printed narrative. Hypertext opens up particular kinds of authoring innovations, such as the linking together of data, analysis and interpretation in the same medium, and the juxtapositioning of materials in written, visual and aural forms. A new multi-semiotic ethnography is becoming possible through digital technologies, which will have to develop new ways of ordering academic argumentation and analysis. We argue that finding creative means of assembling narrative sequences will be germane to the 'art' of hyper-authoring for ethnography, as it has been for the book and the film (although in different ways). We offer some insights from our own experiences of constructing an 'ethnographic hypermedia environment' as a means of illustrating some of these dilemmas.

Introduction

This paper derives from our belief that there are more interesting things for ethnographers to do with their computers than coding field data (see Weaver & Atkinson 1994; Coffey, Holbrook & Atkinson 1996; Dicks & Mason 1998). Indeed, we believe that there is a convergence of "post-paradigm" ethnography (Marcus and Fischer, 1986), which stresses multi-perspectivism and intertextuality, with new types of computing technology such as the Web and multimedia CD-ROMs, which offer new media for ethnographic authoring. In the same manner that Landow (1998) envisages hypertext fiction as a convergence of post-structuralist critical theory and computing technology, we argue that "hypermedia ethnography" can provide a new perspective on both the product and process of ethnography.

This is the proposition underpinning a two-year research project in which the authors are currently engaged, funded by the UK Economic and Social Science Research Council. In it we are exploring the uses of new media in all phases of ethnography, from fieldwork to (re)presentation. The research is also intended to exploit new computer-mediated technologies to allow an integration of visual and written ethnography that bridges the current boundaries between the two. Consequently, our interest is not limited to ethnography as a product (whether written, visual or other) but as a holistic process. Our intent here is not to provide a "how-to" guide nor a purely theoretical analysis, but to discuss the various methodological issues and challenges arising from our experience of authoring hypermedia ethnography on CD-ROM. Our ethnographic hypermedia environment (or EHE) is a hypertextual reworking of an ethnography produced through Dicks' doctoral study (1997) of a 'living history'

heritage museum in Wales. It maps the transformation of the erstwhile colliery, now complete with audio-visual shows and simulated rides underground, into a heritage experience which provides visitors with guided tours of the old coal-mine.

Defining Hypertext/media

The simplest definition of hypertext asserts that 'Hypertexts are electronic documents, read on the screen of the computer' (Bolter, 1993: p. 21). This notion is expanded by Jeff Todd Titon, who claims that:

'Hypertexts are non-linear. Several writing spaces can appear on the screen simultaneously.... In a hypertext, the reader is always offered multiple pathways through the information, and the reading will be different depending on which pathways are chosen and what is read and not read.' (Titon, 1995: p. 441)

The problem with definitions like this last one, which posit non-linearity or non-sequentiality as the defining attribute of hypertext is that, as we argue in this paper, hypertexts will always include some degree of linearity. Whether this takes the form of reading paths taken through the hypertext by readers, or of written paths mapped out in advance by the author, there will always be a linear movement traced through the hypertext itself. It is more appropriate to think of hypertext as multi-linear and multi-directional rather than non-linear or non-sequential.

Our definition of hypertext conceptualises it as a form of text that is computer-mediated and contains authored links that create associations between different instances and forms of text. The term 'hypermedia' is conventionally used to describe hypertexts which incorporate other media, such as video, photographic images, sound, graphics, and so on. Jakob Nielsen (1997) suggests keeping the traditional term 'hypertext' for all systems, regardless of the media they use, but writers such as Delaney and Landow (1991) argue for specifying the term 'hypermedia', in the recognition that mixed media can qualitatively transform the nature of the text itself. We adopt this latter definition, as we wish to draw attention to the specific authoring dimensions involved in producing multi-media hypertext. For the purposes of this article, therefore, 'hypermedia' refers to a particular type of hypertext, namely one that includes a wide variety of media other than lettered text alone.

Hypermedia and the ethnographer

Hypermedia potentially allows the ethnographer to produce more 'writerly' texts. Firstly, hypermedia offers the possibility of creating all kinds of multiple links between both the data assembled and the interpretative texts which comment upon these data (Howard, 1988). Different types of interpretation can be accommodated, so that both the voices of participants and the author's commentary can be more creatively integrated. For example, most hypertexts allow the creation of 'paths' through the hypertext with appropriate labelling, so that the linkages and ruptures between interpretation, the data presented and the potential 'intertexts' of the ethnography itself can be more explicitly foregrounded. Whilst these pathways are designed to guide the reader in the direction of authorial argumentation and/or suggestion, the very accessibility and proximity of the data texts may open up channels for innovative interpretation and reinterpretation - both in the analytic phase and in the representational phase.

Secondly, there is the provision for readers to trace their own paths through these chains of links. As soon as one introduces multiple links into a hypertextual document (rather than merely having a linear sequential link from one 'page' to the next), the author can no longer control how a reader will progress through the environment created, and which directions s/he will choose to pursue. Associations and lines of enquiry can thereby emerge in the act of reading that may not be predicted in advance by the author. Although there is nothing inherent to the provision of multiple pathways or trails in EHEs that will push the reader into constructing pathways of their own, the presentation of

interlinking avenues of enquiry and the facility for switching among them aims to encourage readers to approach the ethnographic environment as a shifting matrix of connections rather than a fixed grid of self-contained narratives.

Of course, a writer can never control how a reader will interact with a traditional printed book either, so we are not suggesting here that a radically new form of communication is enabled by hypermedia environments (see Aarseth, 1997). What is innovative about ethnographic hypermedia environments, however, is that the potential for cross-referencing and for multiple linkages is integral to the medium itself, and can inform all phases of the research process. We shall explore the implications of this below.

Hypermedia and post-paradigm ethnography

The above description of hypermedia should begin to make it clear how EHEs can play a role in addressing some of the theoretical and methodological concerns that have become known as 'post-paradigm ethnography' (Marcus and Fischer, 1986). Particularly in the decade since the publication of Clifford and Marcus' *Writing Culture*, uncertainties over the subject matter, method, medium and intention of ethnographies have all been publicly aired (James et al, 1997). Two of these areas of contention, however, have attracted the most intense critical attention. These are, respectively, its medium and its subject-matter - reflected in the large number of critiques directed at experimentation in ethnography's *mode of writing*, and a concern to redefine its *object of study*. We shall discuss each of these below.

Object of study

Firstly, then, a major focus of post-paradigm ethnography has been the questioning of the category of 'the field'. Many writers have pointed out that this term implies a bounded entity that can be entered and exited, and which exists as an objective 'place' with its own time and social/cultural character (e.g. Fabian, 1983). Clifford (1997) recommends instead a 'multi-site analysis' which is more attuned to the mobility of social forces rather than to relations of fixity and 'dwelling'. Ethnographers, it is argued, need 'to place their subjects firmly in the flow of historic events' (Marcus and Fischer, 1986: p. 44).

It has been argued that the structure of hypertext is better conceived as 'rhizomatic' rather than web-like or branching (see Landow, 1998). The term comes from Deleuze and Guattari's (1987) discussion of 'nomadic thought'. As opposed to the centre-and-branches structure of tree-like metaphors, the rhizome conjoins any one point to any other point through an underground and shifting connectivity that resembles the strawberry or potato plant's off-shoots. It thereby offers an acentred, nonhierarchical structure that is in constant flux and circulation. As one point changes, the whole shifts and re-grows in unexpected and unmapped directions.

Hypertext thus begins to deconstruct the notion of a closed 'field'. It allows many different voices to be brought into creative juxtaposition with each other, through the possibility of incorporating many different kinds of text and data archive. The fact that the ethnographer can assemble a web-based EHE that is linked explicitly to all kinds of other texts, and through them, ultimately to the rest of the Web, means that the field can be more clearly represented as intertextual and interpenetrated than could easily be suggested by the conventional printed book-form.

There is currently a danger that ethnographic writing splinters into a plethora of different genres (see Van Maanen, 1995), and thereby abandons its most valuable attribute - the ability to knit together a layered account of the many and varied practices that make up the social world. If we remain committed to making ethnographic accounts more embedded in the social, ethnographic writing should aim to reunite these different foci in a more textured form. Hypertext creates all kinds of multiple links between both the data assembled and the interpretative texts which comment upon

these data (see Howard, 1988). This facility allows the object of study to breach the boundaries of the research setting itself, since connections can be made with all kinds of intertextual resonances in mind.

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Mode of writing

The second concern, over ethnography's mode of writing, has induced a move away from strongly authored narratives (Atkinson and Coffey, 1995). 'Readerly' narratives seem increasingly suspect, open to charges of ethnocentrism through their claims to an authority that may appear spurious, exercised through a monologic classic-realist style which subdues the voice of the other [4] (see Atkinson, 1990). More contingent writing styles (cf. Richardson, 1994) attempt to rupture the fiction of authorial invisibility [5] and to foreground the heterogeneous perspectives of ethnographic participants (Hertz, 1997). Experimental ethnography has attempted to broaden the representational repertoire of ethnographies (see Dorst 1989; Marcus 1994b; Borchard 1998), and hypermedia adds to those possibilities. Hypertext redefines authoring in ways that take some of these concerns forward without sacrificing the 'thickness' of the writing.

The hypertext-authored (or hyperauthored) ethnography blurs the division of labour between the analysis, the reading and the writing stages of research. Firstly, readers are invited to arrive at their own interpretations through the activity of reading nodes and following links and trails. The author presents all kinds of differently-mediated materials and interpretative texts out of which s/he will construct particular pathways for readers to follow. S/he is no longer charged with penning a single sequential narrative whose object is to persuade and be believed by readers in and of itself. Authoring becomes a matter of identifying a number of interpretative paths which may always be supplemented and subverted by the reader, who will (attempt to) make sense of the material in their own ways. Reading may involve adding to the interpretative texts or mapping new pathways. The relationship between author and reader is thereby reconfigured.

Secondly, the author can conduct the analysis stage of the research within the same medium as the presentation. Currently available hypertext software still tends to conceive of the analysis stage separately from the writing stage (with data-analysis packages such as Scolari's Atlas/ti or the Ethnograph for analysis, and authoring packages such as Macromedia's Authorware or Director for presentation). However, there is no reason suddenly to abandon hypermedia and retreat into conventional word processing once analysis is complete. One of the most interesting features of electronic writing is the potential to open up the researcher's analytical process to the reader, and to grant the reader full access to the data.

In addition, hyperauthors are not confined to 'lettered' representation. The capacity to incorporate still and moving images, as well as sound, means that the burden of meaning is no longer carried by written words alone. Images are no longer merely illustration, reinforcing meanings secured through words, but are themselves charged with the role of communication. This is a hugely significant factor, which requires authoring to come to terms with the very different narrative structures of different media (Dicks and Mason, 1999). We shall explore some of these issues further in what follows.

Multi-semiotic ethnography

One of the most exciting promises of hypermedia resides not just in its rhizomatic and polyphonic capabilities, but in its mixed-media features. The potential for integrating visual and written media within the same technological environment carries significant implications. It allows ethnographers to make the step from thinking of the visual merely as illustrative of argumentation spelled out through the printed word, to seeing it as itself constitutive of meaning. This is an observation that visual ethnographers have been trying to press home for years (see, for example, Grimshaw, 1997). In fact, we need to consider seriously what hypermedia can do that a well-illustrated book or a well-produced film can not. There are potential gains to be derived from exploring how ethnographic representation can simultaneously be a verbal and a pictorial, a visual and an aural activity.

This potential for integrating the visual and the verbal links in well with recent calls to break down the divide between visual and written ethnography (Marcus, 1994a). Traditionally, anthropologists have seen film merely as data to be slotted into a pre-existing classificatory framework, and have failed, according to Marcus, to see it as a different form of mediation. For instance, film allows for the representation of simultaneity, so that the 'transcultural space' of the new ethnographies can be shown as different cultural practices participating in physically separate but simultaneously unfolding worlds. Similarly, in sociology, there have been calls for a greater recognition of the role of visual representation in the social world, and warnings of the limitations of focusing exclusively on talk and texts (e.g. Chaplin, 1994).

Moving images can not only complement the printed word, but can also communicate in a different way. For example, by editing together sequences shot with a digital video camera in the field, particular meanings can be encoded which, when juxtaposed to written text of various kinds, produce quite unexpected and multi-semiotic layers of meaning. Video montages are not equivalent to sentences: conveying an idea in sentence-form and in image form involve quite distinct skills, and produce meaning in quite different ways. When images, written texts and sounds are brought together, new ways of combining iconic and symbolic signs need to be found. Thus, multi-media does not simply mean adding the visual and the lettered modes together, but, as Gunther Kress (1998) has recently argued, the production of a whole new, multi-semiotic code of representation.

A well-constructed EHE would seek to take advantage of the specific communicative modalities of each medium, rather than seeing them as add-on 'special effects'. For example, the modalities of film mean that certain relations of complexity (such as simultaneity) can be opened up, but others are closed down through the 'fixing' quality of the image as opposed to the word (Hastrup, 1992). Film and photography *can* be nuanced and suggestive, but are conventionally read (at least in the documentary genres) as media that confer a particular experiential authority - the quality of having-been-there (Barthes, 1977). Within an EHE, it is possible to destabilise the authority of the image by creatively juxtaposing particular video clips with others, and also with printed text, spoken text and still images.

In this way, hypermedia can provide a means of contributing to the experimentation that has also been occurring in ethnographic film - in the work of Trinh -T -Minha, for example. Debates among film-makers about strategies of representational practice have centred on similar areas of concern to those among ethnographers using the printed word: the possibilities of disrupting the conventional camera/object relation, for example, or dislodging the primacy of the ethnographer's narration (Taylor, 1994). Whilst Marcus (1994a) is correct to suggest that film offers new possibilities for exploring wider and more fluid conceptions of meaning (through critical juxtaposition of images, through the visualisation of 'parallel worlds', etc.), film itself is no more inherently dialogic than print. The potential for a more sophisticated representational practice comes rather from the possibilities of combining different representational forms within the same medium.

Book, film and hypermedia authoring

In hypermedia approaches, one knows in advance that:

- one can incorporate mixed media data texts;
- these data can be flexibly and creatively interlinked;
- they can be analysed whilst producing a fluid and expanding set of interpretative texts;
- these texts can be positioned within a web of interconnecting trails;
- other texts from 'outside' the field of observed interaction can be brought into creative relation with them.

All these assumptions will have implications for how hypermedia ethnography is conceived. Instead of automatically importing rhetorical styles and conventions of argumentation from print-media, the hypermedia environment forces us to question how appropriate these habits are. Atkinson (1990) has noted the *poetics* of ethnographic writing and its role in conveying narrative and authenticating statements: hypertext offers new poetics for the ethnographer to explore (Dicks and Mason, 1999).

We want to suggest that hypermedia offers a different kind of interpretative space than book technology. One immediate realisation any hypermedia author must make is that hypermedia neither is, nor should be, a book on a screen or a film on a computer. A book or a film are physically embodied sequences: each page or shot follows the previous one. Although readers can invent their own sequences by flipping back and forward through the book or film and following their own particular interests or needs, the physical sequence testifies to the existence of an author-ized, standard reading. In hypertext, there is no physically embodied sequence through which the author sets down that standard. Therefore, the author must decide whether, where and how to create a sequence, by providing a clearly marked trail or pathway of links for the reader to follow. The factors which influence this decision are germane to the craft of hypermedia authoring.

The nature of this decision is different to that made by the book-author when assembling the physical sequence of paragraphs and pages, and it is different to that made by ethnographic film-makers when editing a sequence of images. Book-authors know that, apart from the modest amount of footnoting, indexing and appendixing which the printed medium allows, for the most part the textual sequence that fills the pages constitutes the universe offered to the reader, in and of itself. Film-makers hand over the edited videotape, and this alone represents the work that has been done. The contents of the filing cabinet or cutting room floor, the hours of unused footage, the interview transcripts, the fieldnotes, the photographs and pictures, the reports and documents that comprise the data on which the text is based, remain behind.

In hypermedia, on the other hand, authors are released from the demands of this single sequential endeavour. They can present their entire corpus of diversely mediated data and interpretation to their readers, if they so wish, in a variety of media. (For example, an interview with a subject may be both accessible on video and as a written transcript. The fieldwork notes taken during the initial interview plus those appended during transcription may be available to the reader either on screen or as part of a hot link.) We argue that this will not mean relinquishing the project of assembling a sequential account. Instead, the functions of sequentiality have to be carefully considered.

There are two major modes of sequentiality in book-mediated ethnographic writing: a narrative sequentiality (the representation of events, the description of settings, etc.) and a prepositional, theoretical one (an argumentative exegesis which makes statements, provides evidence, identifies significance, draws conclusions, etc.). In the first mode, sequentiality provides such page-turning mechanisms as the gradual revealing of a subject-matter, a chronological ordering of events, the description of settings, even suspense. In the second mode, it allows a rational step-by-step argument to be assembled and signposted. There are, therefore, (at least two) motivations for retaining sequentiality in ethnographic hyper-authoring.

However, the two forms of sequentiality are not, in practice, clearly demarcated. Argumentation is

not constructed, still less authenticated, through the second, prepositional mode alone. As Atkinson (1990) has shown, a 'rhetoric of persuasion' pervades academic writing in both modes. The ways in which evidence is introduced, the framing it is given, the trust that is established between author and reader to believe that "that's the way it was", the degree of 'vraisemblance' that is erected, all go towards aiding and sustaining the interpretation and theorising that occurs in formal abstract propositions. So, argumentation is often not expressed in explicitly stated propositions, but in the very textual organisation of accounts: in the way we select and write descriptions, narratives and so on; how we organise texts in thematic elements; how we draw upon metaphorical and metonymic uses of language; how, if at all, we shift point of view, and so on. (62)

Atkinson's account shows forcefully how thoroughly saturated ethnographic, and other academic writing, is with rhetorical devices of all kinds, geared towards making the account interesting, persuasive and credible in reader's eyes. The danger is that this 'art' is lost in hypermedia. Without the discipline and direction provided by the single narrative sequence, the rhetoric of academic authorship is dispersed, and the claim to credibility may begin to look shaky (Douglas, 1998). As we shall see below, authors will need to consider carefully how to construct chains of video and written texts that will succeed in authenticating the interpretative perspectives that the ethnography seeks to represent. We offer here various insights from our own experience of using digital technology in all phases of the ethnographic process: from inception to representation. In what follows, we firstly consider the impact of introducing video into the fieldwork setting, and secondly we discuss some of the strategies we adopted for authoring our EHE.

Hypermedia and video in the field

There are certain methodological issues which arise in the ethnographer's encounter with video in a hypermedia environment. Some of these are familiar to visual ethnographers; others are posed more particularly by the hypermedia challenge itself, and arise through the particular demands of combining different media into one environment. In our fieldwork, among other more traditional interviewing and participant-observation techniques, we employed "fly-on-the-wall" style filming of the tour guides at the local heritage museum as they conducted their tours. Simultaneously we handed visitor groups a digital camera so that they could record their own images and provide us with an alternative perspective.

The first dilemma arises as soon as filming begins. Whereas the traditional fieldworker will take copious field notes, using the full range of human senses and supplementing this with technological back-up where needed (e.g. in the form of tape recorders), the video ethnographer will spend considerable periods merely filming. Where s/he is the sole fieldworker, the demands of operating the camera can all too easily obscure the social activity happening all around and narrow the field of vision merely to that action which is 'filmable'. (Barbash and Taylor, 1997) The video ethnographer is always confronted by a tension between the demands of visual recording (for visual impact and visual significance, as well as more mundane technical requirements such as good lighting, the positioning of subjects, adequate sound, etc.), and the challenges posed by the need for ethnographic rigour (Weinberger, 1994).

This tension between the aesthetic and the recording functions of film and video technology is a key issue for visual research.. The camera is never a mere extension of the ethnographer's eye, as the visual plane of meaning works through sense-making conventions that are bound up with both a cultural aesthetics and a politics of looking (Hastrup, 1992; Morphy and Banks, 1997). If film is the final output, what is captured on camera needs to convey ethnographic insights. This produces the distinctive challenge of filmic representation: to convey these insights even where the camera can not directly 'present' them in audio-visual terms, through action, dialogue, voice-overs, etc. The deeply-inculcated cultural expectations of film audiences underlying their reading of images, mean that the distinctive 'language of film' is central to visual ethnographic representation. In hypermedia, on the other hand, meaning is not carried by film alone, and these expectations can both be exploited

and challenged through multi-semiotic codes of communication.

Another issue concerns the nature of team work in hypermedia ethnography. The traditional model of fieldwork features a lone researcher who makes a sortie into the "field" to collect data, brings fieldnotes back to analyse, and then writes a monograph. A hypermedia-based project, on the other hand, is probably too complex for one person: it requires the ability to use a camera, proficiency with a wide range of audio-visual equipment and then facility with a wide range of computer software. In many ways, these are the problems that visual ethnographers have faced for many years (Asch, 1988; Chiozzi, 1989). We are working on a "team of generalists" model, in which the authors have both overlapping skills as ethnographers and cultural analysts as well as different areas of expertise: one in hypertext theory and one in visual ethnography. A team of generalists model allows us to try to avoid setting up the boundaries that result from the ethnographer/camera-operator split often adopted in visual ethnography (Barbash and Taylor, 1997), while simultaneously recognising that each researcher needs to bring something unique to the project.

Hyperauthoring in the academy

There are, therefore, particular issues involved in academic hypermedia authoring which make the EHE endeavour a tricky one. Such considerations have led some critics to reject electronic writing in principle, claiming that it leads to the impoverishment of the reading/writing experience (e.g. Birkets, 1994). Although much of this critique is open to the charge of romanticising a golden age of print, it does force us to consider what we may *lose* by doing our authoring in hypermedia. Using hypermedia, we have tried to balance the innovative nature of the medium with the requirements of rigorous academic writing. In ethnographic writing, as we have suggested, these will inevitably include the need for sequentiality, at least in places, in order to establish the credibility of academic argumentation (see Dicks and Mason, 1999). In offering the following account of how we tackled some of these dilemmas, we are not suggesting that hypermedia easily resolves the authoring dilemmas of ethnographic representational practice. Rather, the solutions which follow are starting points for considering how a hypertextual rhetorics and poetics can begun to be thought through.

Guided tours

In the construction of our EHE, we have utilised an over-arching metaphor of ethnographer as guide, which treats the reader as a "visitor" to the hypertext. In the same manner that a visitor to the heritage museum can take a tour, ask the guide questions, browse around the exhibits, go to the help desk if she gets lost and so on, then the visitor to the EHE will always see a help desk on the screen, can click on the tour hall to take a tour, and so on. Indeed, the heart of the hypertext consists of several tours focussed on specific interpretative agendas. Each tour features a default link from node to node so that a visitor can follow the tour in a simple way. It is, of course, possible for the visitor to follow links into other parts of the EHE or maybe wander off the tour altogether if she encounters something more interesting. Suitable named links can take the reader into excursions into optional parts of the tour.

The hypertext itself exists on four "levels." The basic level consists of the various tours: at any point, the visitor may move to nodes related to the current tour on one of the other three levels: theoretical, contextual or reflexive/methodological. Through the consistent use of a hypertext structure so that visitors can understand where they are in relation to the whole, as well as consistent navigation strategies to aid understanding of where their choices will lead them, we minimise reader disorientation.

As we argued above, hypertext offers the potential to 'open up' traditional texts by, for example, making the data accessible to the reader. When using the hypertext environment to help analyse the data, the ethnographer organises the field materials into various linked clusters. It is a relatively simple task to make these clusters available to the reader, who can thereby trace the genesis of the

ethnographer's interpretations. In addition, the reader can, in most hypertext reading programs, create their own links and make notes to aid in the construction of alternative interpretations. Thus, a reader can explore the narratives constructed by the author, browse through the hypertext guided by their own interests, or even move into the 'backstage' area of the data and create their own interpretations.

We have suggested that the structuring of a EHE involves the author in a difficult balancing act between retaining the openness and reflexivity of the text and constructing a representation which is persuasive and credible. In our hypertext, the guide (author) assumes the 'authorial voice' of the EHE, but reconfigures authorship into the role of showing and telling - the showing of the data and analysis, and the telling of different stories. The hypertext provides a network of interlinked texts, and the ethnographer-guide shows the visitor around these, as well as offering credible and persuasive 'stories' of ethnographic interpretation.

The guide takes the visitor on three tours which represent particular interpretative stories, yet along the way constantly points out the other pathways that could be taken. The tours are designed to be credible, in that they interweave interpretation and data texts in the usual manner. Propositions and narratives assembled from node to node offer data as evidence and illustration, through links that depart from particular interpretative texts into nodes which present the data. Thus, the visitor is always just a click away from the data, which are not taken out of context through conventional techniques of citation. In this way, the visitor can read, hear and see the voices of the ethnographic subjects, as well as the guide's own voice. In addition, there are links from data nodes to other data nodes so that the guide invites the reader to note particular contrasts and contradictions, and thereby experience some of the complexity of knitting analysis together into interpretative frameworks.

Visitors, on the other hand, have their own investments and motivations in visiting the EHE. They are both visiting the hypertext as well as visiting the ethnography, and may need the 'guidance' of technical 'help' functions as well as that of the authorial voice. Visitors can use the guided tours to orient themselves through the EHE, but they can choose what to visit and when, and can make their own tours and detours that cannot be controlled by the guide. Visitors will have different kinds of intertextual knowledge to bring to bear on their encounter with the EHE, and this knowledge will influence what kinds of detours they will want to pursue. As long as adequate orientation facilities are always on hand (we have permanent on-screen 'home' buttons, glossary buttons and maps of the tour so that progress can be determined), the aim is that visitors will both be able to explore tours that are already mapped out, as well as discover new tours that offer a different perspective on the data.

Our use of tours allow the hyper-author to retain that sequential structure which " at base " depends on a screen-to-screen linearity. That is, the connection between the base nodes in each tour consists of a simple 'next' relation. Activating the link to the next node in the tour equates to a turning of the page in a book. In this sense, the rhetoric of persuasion is not hypertextual, in that the link is merely an 'and' or a 'then', and adds little to the narrative constructed within each node. On the other hand, the EHE allows much greater freedom than this basic one-level node-to-node tour, as we have seen. There are always other links available to reach the data and other levels of the EHE.

A rhetoric of links

The danger in hypertext is that we merely assemble an interconnected web of text-fragments which are all linked together 'because they can be'. The reader stumbles from node to node encountering a confusing morass of 'bits', following links between them that are endless and meaningless trails of 'ands'. Whereas the book deploys all kinds of sophisticated tropes and rhetorical turns to associate concepts together, the link can seem just a bland and arbitrary bridge slung any-old-how between two points. Worse, links can send confusing messages about the 'point' of the sequence.

As Barbules points out, links in fact always do carry meaning, even if it is only 'and': 'they imply

choices; they reveal assumptions; they have effects, whether intentionally or inadvertently' (117). Barbules identifies a range of meanings of commonly-used links on the Web, and points out that it is the link, and not the node, which provides the means of constructing a chain of interpretation. A link, for example, can suggest a metaphorical or a metonymical relation between two nodes. The link makes the two nodes signify in relation to each other, much as video montage creates meaning through the juxtaposition of images. Meaning occurs between signs, and not just within them. If authors ignore the semantic importance of links, they can end up merely constructing endless chains which have no persuasive power, and which fail to enable coherent interpretation.

A principled and well-structured EHE will need to employ a *rhetoric of links*. One of the strategies with which we are currently experimenting involves constructing a typology of links, which identifies specific link-functions pertinent to the particular demands of the EHE. Once again, there is a trade-off to be considered between freedom and control. Specifying the function of every link closes off alternative associations between nodes. However, a small corpus of rhetorical links can be assembled: for illustration ('for example'), exposition ('furthermore'), contradiction, ('however'), and others. It means labelling links in a way that readers can recognise so as to make an informed choice about following them. Unfortunately, link technology is still in its infancy, and these kinds of techniques require significant further development in terms of screen architecture.

Conclusion

Far from heralding a radically unstructured and anarchic mode of communication, hypermedia initiates a new poetics of ethnography. This does not mean rejecting wholesale the art of print-based ethnographic authoring. Indeed, this paper has acknowledged that we will not want to lose the skills and techniques of print-derived academic argumentation. What hypermedia does mean is that aspects of this art need to be looked at anew, and fresh models of rhetorical communication devised. These will not mean throwing sequentiality away, but carefully considering how to employ it within the more open and porous structures of hypertextuality. We will need to recognise that sequences no longer consist only of 'pages', but of lateral, rhizomatic links that put into motion new sequences and directions. In this way, we can determine how sequences can be thought of as both nodes and links, to be co-opted into the meaning-making power of the text.

These comments of course have implications for the whole process of ethnography. How do we approach issues of confidentiality if we intend making the data available to the reader? When planning the fieldwork, how do we integrate the use of audio-visual equipment? Is the traditional model of the lone ethnographer appropriate or desirable? What do we not see when we look through the camera's viewfinder? As an ethnographer, how honest can I be in my fieldnotes if I plan on scanning them into a computer for anyone to see? Many of these issues have been faced by visual ethnographers, but will provide new headaches for 'textual' ethnographers. However, we suspect that this particular convergence will provide fruitful avenues of connection and redefinition between two artificially divided disciplines.

Finally, we will have to acknowledge that this form of ethnography has a powerful and entrenched rival to contend with in the shape of the book (and, differently, the film). Rather than replacing either of these, hypermedia ethnography will carve out its own role. Ethnographers may adopt many hypertextual features into their word-processed presentations, and indeed, may construct those presentations on the basis of hypertextually-aided analysis. They may, however, stop short of the kind of fully hyperlinked authoring discussed here. Nevertheless, as our conceptualisations of textuality have expanded in relation to new technologies of representation, ethnographers have already started to rethink the ways in which we persuade our readers and translate our data for them. In the future, as the page blurs into the screen and reality merges with the virtual, the relations between analysis and presentation, reading and writing, images and letters, and between movement and stasis, will be central indices of the new digital rhetorics that ethnography will need to develop.

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