On-line with e-mums: exploring the Internet as a medium for research

Clare Madge* and Henrietta O’Connor**

*Department of Geography, University of Leicester, Leicester LE1 7RH
Email: CM12@le.ac.uk

** Centre for Labour Market Studies, University of Leicester, Leicester LE1 7RH
Email: HSO1@le.ac.uk

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This paper contributes to the emerging debate about the value of on-line research. Drawing on the experience of an Internet-based Cyberparents project, it explores the possibilities and limitations of web-based questionnaire surveys and on-line synchronous interviews. It discusses some of the implications of conducting research in the virtual arena, with particular emphasis on sampling, on-line interactions and computer-mediated conversations. Although on-line research holds promise, its potential should not be exaggerated: many of the issues and problems of conventional research still apply in the virtual venue.

Key words: Internet, on-line methods, parenting

Introduction

After a slow start compared to other disciplines, geographers are now fully engaged in the debate surrounding the impact of new information and communication technologies (ICT). There has been a proliferation of research on the implications of ICT for virtual places, spaces and communities (Kitchin 1998; Crang et al. 1999; Barta-Smith and Hathaway 2000; Holloway and Valentine 2001a; Wilson 2001); on the use of ICT in changing forms of communication, identity and geographical discourses (Adams 1997; Aitken 1999; Pritchard 1999; Valentine and Holloway 2001); as well as on the impact of ICT on geographical education (Hill and Solem 1999; Solem 2000; Vincent 2000). Yet despite this expansion of work into the virtual geographic world, less has been written about the potential of ICT as a medium for research.

This is surprising, since it is widely acknowledged in other social sciences that ICT offers researchers a new platform for interaction, with novel ways of creating and obtaining data. Internet methodologies thus offer interesting possibilities for interacting with participants in innovative ways through administering electronic surveys (Roberts and Parks 2001), reconsidering sampling strategies (Litvin and Kar 2001) and conducting qualitative research (Chen and Hinton 1999; Mann and Stewart 2000). Qualitative research techniques such as participant observation and discourse analysis have been used in a virtual setting to study on-line communities, specialized websites and list servers (Sharf 1997; Herring 1999). Virtual ethnographies have also been conducted to investigate on-line communities (Soukup 1999; Ward 1999; Hine 2000; Miller and Slater 2000) and virtual reality technologies (Green 1999). The suitability of cyberspace as an interview venue has also been explored. Asynchronous interviews, characterized by the fact that they do not take place in ‘real time’, have received the most attention to date. These are usually facilitated by email (Kennedy 2000), bulletin board services (Ward 1999) or in a listserv environment (Gaiser 1997). The success of these methods has been varied (Schaefer and Dillman 1998; Selwyn and Robson 1998).

Although the web-based survey is gaining in popularity (Coomber 1997; Hampton and Wellman...
there is little existing literature appraising its value. As Smith (1997, 3) commented, her findings of a comparative study of email and web-based survey techniques had significant value ‘...in the face of virtually non-existent empirical research in web-survey administration’. In addition, according to Chen and Hinton (1999), there has been little academic assessment of the advantages and limitations of synchronous or ‘real time’ on-line interviewing. Indeed, with a few notable exceptions (Gaiser 1997; Chen and Hinton 1999; Taylor 1999; Mann and Stewart 2000), there have been few empirical studies of virtual synchronous interviews. Recognizing this lack of critical assessment, this paper explores the potentials and problems that web-based questionnaire surveys and on-line synchronous interviews present to geographers. As such, the paper contributes to the emerging debate about the value of on-line research.

The research process

The paper draws on the experience of a recent Internet-based Cyberparents research project (http://www.geog.le.ac.uk/baby/), which was initiated to examine how, why and in what ways new parents use the Internet as an information source about parenting and as a form of social support. On-line methods were considered the most appropriate research tools for investigating this on-line community. A web-based survey was used to identify general patterns of use of one specific parenting website, while more in-depth data were gathered from the website users through semi-structured virtual group interviews conducted using a software conferencing technique – Hotline Connect. The paper focuses on the ‘banal everyday use’ (Holloway and Valentine 2001b) of one specific place in the digital world (http://www.babyworld.co.uk) by new parents. This ‘discourse community’ was selected for research because it has been difficult to reach via conventional research approaches and is also high on the policy agenda with the development of the government’s £540 million parenting support scheme ‘Sure Start’ (Buckby 1998).

The Cyberparents project focused on one pioneer UK parenting website: http://www.babyworld.co.uk. ‘Babyworld’, which is now a subsidiary of a UK Internet service provider, was started by Radcliffe Medical Press, a medical publisher, ‘...determined to bring accurate and reliable advice to new parents’ (http://www.babyworld.co.uk, accessed May 2001). It was selected as the case study site because it was the first UK-based parenting website, launched in 1995, and was advertised as ‘the mother of parenting websites’. At the time the research project was set up (June 1998), this site had a high profile amongst parents as it was advertised in parenting handbooks distributed by hospitals to new parents (Rodway 1997). Current usage figures show that the site has a membership of approximately 50 000 and receives an average of 160 000 visitors and four million page impressions per month (source: site providers). Babyworld’s mission is to support a community where ‘...new and expectant parents can share experiences and support, women can learn about their bodies, their baby, and childbirth and parents can celebrate the joy of a new life’ (http://www.babyworld.co.uk, accessed May 2001). The site’s slogan is ‘Babyworld: be part of it’.

Web-based questionnaire survey

The first stage of the project involved setting up an on-line survey with an associated project website to glean general information about usage patterns of Babyworld. This on-line method was selected for several reasons: it would rapidly reach a wide audience; it was quicker and cheaper than postal mail, faxes and phone; and responses could be received around the clock and directly loaded into an automatic analytical package. Additionally, web-based surveys provide a far superior questionnaire interface to email surveys and it is possible to make them more user-friendly and attractive, thus encouraging higher response rates. The web-based survey can also be included on a dedicated website, which can be used as a platform to provide more information about the project, the researchers and the affiliated institution.

The questionnaire survey (http://www.geog.le.ac.uk/baby/babyworldform.asp) was created using the html compiler ‘Adobe GoLive 4.0’
and followed a similar format to traditional self-completion postal questionnaires, the main difference being that the survey form was set up on-line. The questionnaire was designed to be simple (24 questions) and quick (10 minutes) to fill in and included tick box yes/no questions, ranking attitudinal questions and open-ended responses. The web-based questionnaire was divided into four sections: the first asked general questions about Internet usage, the following two sections investigated the reasons and attitudes for using the website for parenting advice and the final section asked for profile data. The survey ended with a short message to thank the respondents and a request to email the researchers through the direct link if the respondent was willing to participate in a further detailed on-line interview.

A response database was set up on the departmental server to collect the completed questionnaire data in Microsoft Access, directly ready for analysis. The survey was accessible to anyone who used the website over a six-week period. In the first two weeks, over 110 completed questionnaires were received, but this response rate tailed off during the remaining four weeks to give a total of 155 responses, with a further 16 email responses2 from people expressing their interest in a detailed further interview.

In order to administer the questionnaire, a series of webpages were developed (http://www.geog.le.ac.uk/baby/). All pages included the University of Leicester crest to show institutional affiliation, to give the project credibility and ensure the participants could verify our status. The website included a homepage with a brief introduction to the project, which was linked to further pages entitled ‘meet the researchers’ (http://www.geog.le.ac.uk/baby/meet.html) and ‘more about the project’ (http://www.geog.le.ac.uk/baby/more.html). The final page was the questionnaire survey. Several hotlinks were created between the questionnaire, the Cyberparents website and Babyworld website. The links from Babyworld to the research webpages were made at the suggestion of the website providers and positioned strategically in prime locations on the Babyworld home page and the most used pages of the website. The hotlink included an icon (parent holding child’s hand) and a question ‘are you a cyberparent? Click here if you can help us’, which we hoped would intrigue and interest users sufficiently to click on the icon. This was the only mechanism to elicit responses. It is significant to note that without the agreement and cooperation of the website providers to place strategic hypertext links, the survey would most certainly not have been successful, since it would have been impossible to recruit these specific on-line community members in any other way. Thus the issue of access to on-line communities and website providers is crucial when conducting on-line research. As Coomber (1997) has highlighted, there is little point in having a web page and setting up an on-line survey and passively ‘waiting’ for eligible respondents to find the site: more active enrolment is needed to encourage users to complete an on-line survey. In this case the significance of having the site providers ‘on our side’ cannot be underestimated.

On-line synchronous interviews

The second stage of the research process involved semi-structured synchronous virtual group interviews to gain more detailed understanding of the key themes emerging from the questionnaire data. The first task was to find a convenient way to carry out these interviews. It was immediately apparent that face-to-face (FTF) interviews would be impractical, costly and time-consuming because our respondents were geographically widely dispersed. Apart from the distance factor, both the researchers and the respondents had young children and/or were pregnant, making the ‘traditional’ interview unfeasible. As this research focused explicitly on Internet usage, our interviewees were already, by definition, Internet users and likely to be familiar with virtual communication methods. An Internet-based interview forum seemed to be a logical, low cost, convenient and innovative research method.

Whilst there is a vast body of literature concerned with qualitative interviewing, the on-line approach to interviewing remains a novel technique. The work that has been published has mainly been concerned with asynchronous or non ‘real time’ exchanges usually conducted via email or a listserv facility. Gaiser’s (1997) on-line focus groups, for example, were conducted in a listserv environment. One advantage of this is that all participants are regular listserv users, thus eliminating the need to set up mutually convenient chat times. However, it is not a ‘real time’ facility, respondents can post their reply at any time and as such the facilitator cannot play an active role in moderating the interview. We were keen to encourage group interaction with a high level of immediacy and engagement with the
topic. To some extent, we wanted the interview to resemble FTF group interviews, where respondents would answer immediately and be able to interact with one another. As Chen and Hinton (1999) have observed, ‘real time’ on-line interviews provide greater spontaneity, one important element in producing a high quality interview.

‘Hotline Connect’ was selected to develop the ‘real time’ interview forum. It is a user-friendly application, available for both Apple Macintosh and Microsoft Windows based platforms. It enables users to chat, either in groups or one-to-one, to others simultaneously logged on to a specified server address. It does not have high power requirements and can be installed and used easily without the need for sophisticated hardware or a high level of technical ability. This was important to us because we were already reliant on the goodwill of the interviewees for modem live time and the motivation to install the software and so the process needed to be as simple as possible. Indeed, only one participant dropped out at the installation stage because, unexpectedly, her computer was not able to run the software.

Each interviewee was sent both the software and a set of guidelines on installation and use by postal mail. If problems arose, email or telephone advice was dispatched. Four group interviews were arranged and one hour was allowed for the interview, although participants were requested to be on-line a few minutes early to ensure that everyone was successfully connected. Each interview began with a welcome message and an explanation of who was ‘present’. We went on to introduce ourselves and provide guidelines about the interview, explaining the format of the questions and highlighting potential technological difficulties. At the end of each interview, we thanked the participants, invited them to request a copy of the transcript and explained the publication process. During the interviews, we worked simultaneously as a team on one computer, with one of us acting as a ‘typist’ and the other as a ‘moderator’, thinking about the questions, the flow of the interview and the emerging conversation. Overall, there were few glitches in the use of the conferencing software, although one respondent in Malaysia had her link interrupted owing to transmission problems, which disrupted the interview process. The final interview transcript was saved and immediately transferred to a Word file, saving transcription time and cost.

Some implications of on-line research

The paper now turns to a discussion of three selected issues relating to the use of these two on-line methods: sampling matters, interactional dilemmas and computer-mediated conversation.

Sampling matters

On-line web-based research presents serious sampling problems for a study based on the quantitative tradition. There is no access to a central registry from which to create a sampling frame, nor is there any way of discerning how many users are logging on from a particular computer or how many accounts/memberships a particular individual might have. This means random sampling or gaining a representative sample is not possible. Internet surveys on the whole, therefore, attempt to select a sub-set of users to participate in the survey. This may be through attempts at non-probability sampling, or through self-selection. Coomber (1997) has suggested that on-line self-selection is suitable to use when researching a particular group of Internet users. Gaiser (1997, 136) is in agreement, stating that: ‘...if the research question involves an on-line social phenomenon, a potential strength of the method is to be researching in the location of interest’. As our primary aim was to examine trends of use amongst those parents who access one particular parenting website, our sample represented ‘...a valuable source of indicative as opposed to easily generalizable data’ (Coomber 1997, 1). As such, it is recognized that the research centres on a small group of parents (those with Internet access who were technically literate and motivated to complete the questionnaire) who may not be representative of parents on the whole. The sample does not, for example, include parents who do not have Internet access or users of the website who did not answer our survey. While the self-selection procedure clearly limits the scope of the results, it is important to note that self-selection occurs in many conventional surveying situations and is not unique to on-line research.

Additionally, access to the Internet is still highly unevenly distributed both socially and spatially (Warf 2001). Research has documented that in the early years of its inception, those using the Internet tended to be predominately male, white, first world residents under 35 years old (Mann and Stewart 2000). The Cyberparents questionnaire sample partly replicated this social stratification with a bias towards UK-based (8%), white (81%), young respondents
(76% aged under 35). The sample did, however, show higher proportions of female respondents (84%), married people (63%) and people with children (89%) than might be expected from a general Internet sample, reflecting the ‘mother-orientated’ nature of the website. The employment status of the sample population also fitted with the website target audience of parents-to-be or new parents, with 6% on maternity leave, 28% housepersons, 19% being in part-time work, and only 23% in full-time employment.

A further issue relating to on-line sampling involves verifying the identity of the participants. In this research it was not possible to do so, but the questionnaire was so specific to being a new parent and a user of the Babyworld website that it would have been difficult, if not impossible, to complete the questionnaire without a detailed working knowledge of the site. However, this does not diminish the possibility that some respondents may have been ‘spoofs’ or indeed may have played with their on-line identity in completing the research (Roberts and Parks 2001). While being one of the irresolvable sampling difficulties of on-line research at present, again it is not unique to virtual methods: incorrectly completed questionnaires and non-verifiable identities may also be a feature of conventional surveys. Moreover, in conducting on-line community research, it must be considered how necessary it actually is to ‘prove’ the off-line identity of the participants. Taylor (1999, 443) argues that this depends on the initial research question and that ‘. . . the acceptance of on-line life as a thing in itself’ is important. Moreover, it is increasingly recognized that on-line textual persona cannot be separated from the off-line physical person who constructs them and they are commonly based on off-line identities in any case (Valentine 2001, 56).

Despite these inherent sampling problems, one great advantage of on-line research that must be stressed is the ability to ‘. . . connect with groups that are not bound in a particular area but that share a common interest’ (O’Lear 1996, 210). This was especially the case where ‘traditional’ surveying was not feasible owing to physical and mental exhaustion of many mothers after childbirth and the constant demands of caring for a new baby in its first few months of life. Indeed, the interviewees indicated that few would have been willing to participate in a survey that involved travelling and interrupting the immediate needs of their baby. Certainly, in this research project cyberspace has provided a virtual social place where the researchers and participants have been able to meet and interact, which, quite simply, may not have been possible in the ‘real world’ owing to the space/time limits of women with young children (both researchers and participants). Through this new social space created by the Internet, a ‘community’ (women with new-borns or young children) notoriously difficult to reach, and hence habitually left out of research, has been contacted.

It is clear therefore, that although the web-based survey has great potential in reaching specific population sub-groups difficult to access using conventional means, it also has the potential for supporting the views of those privileged with computer access. This is especially the case if the research is represented uncritically without reference to the sampling procedure. Findings from web-based surveys are indicative, should be read with caution and analysed with acceptance of the likely relative sample bias (although the degree of this cannot be measured). While the issue of sampling is complex and difficult to address, it must be noted that more recent research comparing conventional methods and electronic methods increasingly reports that the sample characteristics of the two methods are converging, with electronically solicited samples becoming more like random paper-based samples, as technological uptake of the Internet increases (Litvin and Kar 2001).

Engagement and interaction
Thompson (1995, 4) suggests that:

>. . . the use of communication media involves the creation of new forms of action and interaction in the social world, new kinds of social relationship and new ways of relating to others and to oneself. (Quoted by Crang et al. 1999, 11)

This raises some serious questions: Does the electronic interviewer require different skills to engage the interviewees and build up rapport than the ‘real world’ interviewer? Does the disembodying quality of on-line research alter the interview process? And what impact does the virtual setting have on the researcher’s role in the research process?

As Oakley has noted:

>. . . the goal of finding out about people through interviewing is best achieved where . . . the interviewer is prepared to invest his or her personal identity in the relationship. (Oakley 1981, 41)
We developed several ways of compensating for the fact we could not see the interviewees in order to build up rapport. First, we posted photographs and biographies of ourselves on the project website to reveal our bodily identities. As part of the organization of the interview process we then emailed the women individually, often sharing concerns about how we would deal with childcare arrangements during the interview hour. A personal relationship was initiated in preparation of the interviews in a similar manner to that which might have been used in conventional interviewing, the main difference being that the relationship was based on written rather than oral communication. This meant that the participants had some degree of knowledge of the researchers prior to the interviews, but to cement this development of rapport we also initiated each interview with personal profile details, in the hope the women would do the same. This was usually successful and gave ‘face’ (or at least context) to everyone involved in the interview conversation.

Although this degree of self-disclosure was similar to that which we would have invested in a FTF interview, we felt it did build up trust and aided candid and honest exchanges in our on-line interactions. As Paccagnella (1997, 3) has recorded, a stranger wanting to do academic research into on-line communities is often viewed as an unwelcome arbitrary intrusion. In this case our ‘insider’ status as users of the website and our commonality of identity as new mothers certainly facilitated these mother-to-mother interviews and dispensed with the need for any cultural gatekeepers. Overall then, we did not need to develop radically new ways of building up rapport with the women, rather the engagement process was characterized by continuity of methods with ‘real world’ techniques.

It was during the interview process, however, that some interesting differences emerged. The on-line interview is a process that removes the tangible presence of the researcher, so bodily presence (age, gender, hairstyle, clothes) become invisible. According to Chen and Hinton (1999, 13.2) this results in the potential of the virtual interview to become the ‘great equaliser’, with the interviewer having less control over the interview process. This we feel is a rather utopian vision. In our case we posted photos of ourselves on our webpages and shared our background interests with the women, both important processes in creating rapport and breaking down the researcher/researched relationship, giving ‘clues’ to our bodily identities. This may have influenced the interview process with white, 30-something women feeling more comfortable talking to us than other groups. Additionally, in the situation of a virtual interview, the speed of typing dominates the interaction rather than the most vocal personality, which although having the potential to disrupt power relations amongst groups, has the possibility of marginalizing people with poor or slow keyboard skills. Moreover, the ‘equalizer’ argument glosses over the structural power hierarchies that enable researchers to set the agenda, ask the questions and benefit from the results of the interview process.

Nevertheless, we must acknowledge that for the interviewees, the ability to mask their identity changed some accepted norms of behaviour and probably allowed them a more active voice in shaping the tone and atmosphere of the interview. As Morahan-Martin expresses:

> On-line anonymity and lack of face-to-face interactions frees individuals of social and physical constraints, and has allowed women to express parts of themselves that they might not have otherwise in a safe environment, enabling them to explore new identities, heal inner wounds and express sexuality. (Morahan-Martin 2000, 683)

In our interviews, freed from the constraints of bodily presence, some of the women were flirtatious (amongst themselves, and us) in a manner we felt would not have arisen in FTF interviews. There was a nuance of a sexually charged atmosphere, particularly on one of the evening interviews. Despite Gaiser’s (1997, 142) warning that virtual interview discussion may be ‘. . . superficial and playful’ with interviewers finding it more difficult to persuade participants to ‘. . . reconceptualise their behaviour . . . to participate in substantive discussion’, we found that the relaxed and informal atmosphere created a platform for successful interviewing. Indeed, as is common in conventional situations when women interview other women, the interviews all provided high levels of self-consciousness, reflexivity and interactivity (Figure 1). Whether this was owing to the nature of the interviewees (self-selected, motivated, frequent on-line users), or owing to the nature of the subject manner, clearly very close to the hearts of the women involved, it is difficult to judge. In our virtual interviews, we did not encounter the much written about ‘. . . aura of suspicion’ surrounding ‘. . . stranger-to-stranger communication in cyberspace’ (Smith 1997, 40).
The success of the interviews may also have been due to the fact that, while all the women were in different locations, all but one chose ‘home’ as the interview venue. As Mann and Stewart (2000) suggest, this is one of the major advantages of on-line research in that women can be in a familiar, comfortable and physically safe environment, resulting in them feeling more in control of the interview process.5 As Dyck (1997) has revealed, in locations where interviewees feel exposed, powerless or ill at ease, they tend to withhold information, thereby impeding the success of an interview. By interviewing the women at home, where much of their parenting knowledge and experience was practised (although evidently in this case not necessarily from where it emanated), the balance of power shifted to...
the interviewees a bit more, putting them at greater ease and improving the interview process. The relationship between interview location and research power relations is clearly similar in both virtual and 'real' settings. Thus although these virtual interviews did involve a few novel features of engagement and interaction specific to the virtual venue, other features were similar to that involved in more conventional interviews. This continuity was not, however, a feature of the actual computer-mediated conversation to which we now turn.

**Computer-mediated conversation**

Michaelson (1996, 58) notes that: ‘The relative anonymity that IT provides also changes the rules of discourse.’ In virtual interviews it removes the ability of the interviewer to use and interpret paralinguistic communication and is dependent on written rather than spoken language (Chen and Hinton 1999, 12.1). Certainly in this case the degree of abstraction that the virtual interview involved had impacts on the nature of the interview ‘conversation’. The lack of visual and tactile communication for example, was replaced by specific Internet language. Paralinguistic expressions such as lol (laugh out loud) and emoticons (emotional icons used to express feelings, for example ;-) which represents a wink) were used by the interviewees a lot to replace facial expressions and voice quality (Figure 1). It took us on-line novices a while to learn this new language! The absence of audio/visual cues (or clues) meant that often the empathy we held with the woman had to be explicit rather than through utterances and gestures. This level of abstraction was, at times, quite disconcerting and there were occasions when we were ‘lost for words’, taking some time to decide on what to send as a message, because we felt like our written comments sounded banal or our questions too direct and leading. We moderated each other on this matter and feel that we very much benefited from working on-line simultaneously. In other ways, the degree of abstraction was quite helpful, as it was a means by which we could keep the interview flowing along the key themes and avoid being sidetracked too much. Interrupting a virtual conversation somehow felt more acceptable in the written word than in the spoken FTF context. On the whole, this meant that the interviews flowed well, although it did also mean that the researchers dominated the research agenda (this was an active decision, which could be altered given a different research remit).

There is now widespread recognition of the gendered nature of on-line communication, with gender bias in dominance of discussions, misogynistic attitudes and language and message content (Herring 1999). Herring (1996) has noted that on-line utterances tend to be male orientated and male dominated, with sexual harassment and flaming (abusive, rude or dismissive comments) being common. This was not the case in our interview process. The on-line interactions were supportive and sensitive, with a high degree of trust and intimacy. This is probably partly owing to our sample population, being Babyworld users, which is predominately a woman-centred website based on knowledge sharing and support. As such, our findings contrasted with Soukup’s (1999) virtual ethnography, in which he discovered that female chatrooms (as well as male chatrooms) were characterized by masculine forms of interaction, such as competitiveness, argumentativeness and sexual humour, because female chatrooms constantly faced the outside influence of males. Our interviews were permeated with ‘women’s interactions’, resulting in a style and sensitivity of communication characteristic of female-dominated talk in other settings (Herring 1996; Savicki and Kelley 2000).

Overall, although the interviews progressed in a smooth manner, because questions and responses were posted in ‘rounds’ with time lags, the final interview text is littered with interruptions and non-sequesters, resembling a conversation, not a linear written word. Because of this, in tracing the genealogy of the interview, both the interviewers and the participants followed the main thread of conversation and ignored conversational side-tracks probably more effectively than would have been the case in a FTF encounter. ‘Silences’ took on an added poignancy, as we needed to consider whether the silence was owing to the fact that the participant was thinking, was typing in a response and had not yet hit the return button, or had, in fact, declined to answer the question, or even left the interview. As such, the data attained from this method is ‘...distinctly different from that of a transcribed conversation’ (Chen and Hinton 1999, 9.1). In our case it was less structured and more interactive than one might expect from a FTF interview transcript (Figure 1). We concluded that the virtual interview bridged the oral/written divide. Although clearly in written format, the type of interventions were very oral in nature. The researchers and participants paid little attention to issues such as spelling and grammar, as
the nature and meaning of the conversation took precedence over the correctly written word. As such, the transcript very much resembles a ‘written conversation’.

Chen and Hinton (1999, 12.6) distinguish three main differences between written and spoken language and discussion of these lends weight to our claim that the on-line interview bridges the oral/written divide. First, they state that there are no words in the written language indicating specific nuances of context. Clearly, in our on-line interviews emoticons and paralinguistic expressions were used to replace these. Second, written text is more explicit and structured than spoken word. While we did find our transcripts to be very explicit, they often defied structure, and the lack of attention to grammar and spelling certainly more closely resembled a conversation than a text. Finally, in the written text the individual becomes separated from the text, standing apart and objectifying their experiences and creating the opportunity for self-editing before pressing the return button. Again, we did not find this to be the case. Since our interviews were synchronous and conducted at the speed of the slowest typist, it was rare to find anything other than spontaneous interaction. If editing did occur, then it did so on-screen as qualifying statements. To conclude then, the novel manner in which one converses on-line demonstrates tangible differences with FTF interactions.

Conclusions

Hopefully this paper has raised some insights into the possibilities and limitations of the Internet as a legitimate research tool for geographers. In terms of its benefits, the Internet can aid interaction with formerly unapproachable groups, providing previously unobtainable information and perspectives. Although sampling problems remain, the indicative data gained from on-line research may be useful for research on population sub-groups and for exploratory analysis. Savings of time and money are also to be recommended. As on-line research is still in its infancy, many of its potentials are still to be discovered and evaluated.

Despite its promise, the limitations of on-line research are also coming to light. Virtual interviews and web-based questionnaires are still fairly novel techniques and while some of their limitations may therefore be solved in time, others may never be remedied. As Smith (1997, 4) concludes: ‘The new technology offers a spate of problems layered over the old.’ Indeed although the data collected by virtual interviews, in particular, can be rich and valuable to the researcher, the potential of on-line research should not be exaggerated: many of the issues and problems of conventional research methods still apply in the virtual venue. Caution should be stressed in an attempt to avoid the ‘cyberbole’ (Imken 1999) and overdrawn opposition between ‘real’ and virtual techniques: in this project telephone, postal mail, FTF interviews and paper-based resources were used in conjunction with on-line techniques.

Indeed it is actually unlikely that there will be a radical transformation of geographical research through ICT, but rather it offers some interesting new potentials for geographers in terms of making visible ‘... arenas of social life previously distant and concealed’ (Crang et al. 1999, 11). This is particularly the case when investigating on-line communities or Internet usage, while on-line research may in fact be a poor substitute to more conventional methods when off-line communities are the focus of research. On-line research is just beginning to show its potential to geographers as a useful adjunct to existing methods, but much still remains to be done to assess its usefulness. We need to:

- unwrap the ‘layers of technology’ (Lyman and Wakeford 1999) to show how the design and limits of technology will affect methodology;
- explore the way virtual research locates the participant and researcher in relationship to space and time (Lyman and Wakeford 1999);
- examine how spatial metaphors alter the research environment (Dodge and Kitchin 2001) and
- investigate the ‘boring and invisible’ (Star 1999) technologies and their implications for the virtual geographic world.

Notes

1 This pilot exploratory research project was funded through small internal grants from the University of Leicester and written up while on study leave. Also thanks to babyworld.co.uk and all the women who were interviewed: without you the research would not have been possible!

2 Of the 16 respondents who agreed to be interviewed, only one was male. However, he did not ‘arrive’ at the arranged time of interview, hence all interviewees in the end were female.

3 More information about the Hotline Connect Software that was used is available from the Hotline website. This can be found at: <http://www.bigredh.com>
4 This posting of photographs and biographies raised several important ethical issues. A certain image of the researchers was constructed and presented to the interviewees. Our identity as new mothers was stressed, while simultaneously the power and prestige associated with working for the University of Leicester must have created a sense of legitimacy and authority for the project. It is unclear how this portrait of ourselves was interpreted, manipulated and reinvented by the women, but they did state that the fact that we were new mothers had influenced their decision to be interviewed in the first place. For a more detailed discussion of issues of identity and ethics see Madge and O'Connor, in progress.

5 It must, however, be acknowledged that for many women the home is a site of violence (not a physically safe environment) and a workplace (not a comfortable place) rather than the idealized haven suggested by Mann and Stewart (2000).

6 Typing and spelling errors have been retained in the transcripts in the same way that face-to-face interviews are recorded verbatim.

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