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Subjective Intersections in the Face of the Machine

Gender, Race, Class and PCs in the Home

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ABSTRACT This article is a call to feminist science and technology studies (STS) to engage with debates about the intersectionality of gender with race and class in analyses of women's relationships with their computers – these debates are well established in the broader field of gender studies, but comparatively absent from studies of gender and technology. Furthermore, in order to understand women's many and varied technological relationships, it is necessary to explore the diverse ways in which individual women experience their gender, race and class in their relationships with their PCs. The article draws on the stories told by 14 working-class women from ethnic minority communities about the introduction of networked computers in their homes, to argue that we need to account for women's *subjective* experiences of the identity intersections that take place in the face of the machine.

KEY WORDS class ◆ gender ◆ ICTs ◆ intersectionality ◆ networked PCs ◆ race ◆ subjectivity

WHY FEMINIST STS NEEDS INTERSECTIONALITY

Despite the argument of some scholars that gender/technology relations are still underexamined (see, for example, Green and Adam, 1998), feminist science and technology studies (STS) is, today, a comparatively well-established field of academic enquiry. From Donna Haraway's influential 'A Manifesto for Cyborgs' published in 1985, through Sadie Plant's (1997) monograph *Zeros + Ones: Digital Women and the New Technoculture* or Merete Lie and Knut Sorenson's (2002) collection *Making Technology Our Own: Domesticating Technology into Everyday Life* to Judy Wajcman's recent *TechnoFeminism* (Wajcman, 2004), relationships between gender and

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technology have been conceptualized in a number of different ways. Rejections of technology as masculine and oppressive or celebrations of its liberating potential for women have, on the whole, been superseded by less polarized approaches that seek to understand both technology and gender as mutually constitutive social processes. Consequently, the proposals within feminist STS that we perceive of both gender identities and technologies as cultural constructions and that gender is embodied in technology, while technologies shape our understandings of gender, are now widely accepted. As Terry and Calvert argue, just as gender produces and is produced by culture, so technologies reflect, structure and produce gender relations (Terry and Calvert, 1997).[1] Henwood's argument that gender and technology are not 'fixed and "given", but [are] cultural processes which (like other cultural processes) are subject to negotiation, contestation and, ultimately, transformation' (Henwood, 1993: 44) neatly captures this perspective.

Furthermore, some feminist scholars recognize that, among women, relationships with technology differ widely. Most well-known are the works of Donna Haraway and Sandra Harding for their attempts to develop anti-sexist, anti-classist and anti-racist perspectives on science and technology (Haraway, 1985, 1988, 1998; Harding, 1986, 1991, 1998). There are other examples too, including Stepulevage's exploration of intersections of gender, race and class in experiences of ICTs in everyday life (Stepulevage, 2001); Hammonds's discussion of gender, race and new technologies of morphing and miscegenation (Hammonds, 2000) and Wakeford's insistence on the need for studies of women and technology to commit to the production of 'antiracist feminist scientific and political knowledge' (Wakeford, 1997: 63, quoting Haraway, 1991b). Roberts' recent article on the menopause and HRT reflects on the usefulness of the concept of chiasmas for understanding interconnections of sex and race (Roberts, 2004) and Landstrom explores non-representative gender–technology relationships and variation, difference and contradictions among women in their engagements with technology (Landstrom, 2004). Despite these examples, within feminist STS, as Landstrom points out, there is still a tendency to assume that men and women relate differently to technology, to analyse encounters with technology according to one analytical category – gender – and to exclude the non-representative relationships that interest her. Indeed, it is symptomatic of the relative invisibility of race in feminist STS that, although Haraway's cyborg was a racial as well as a gender hybrid, this has largely been ignored in the field's widespread adoption of the cyborg metaphor.[2] My argument in this article is that feminist STS needs to acknowledge that techno-experiences cannot be understood by reference to only one aspect of identity, like gender, and to engage with debates about intersectionality, an engagement which is comparatively absent from studies of gender and technology.[3]

To do this, it is useful to turn to the work of a number of feminist scholars from the 1980s, who initiated debates that are by no means over. In 1989, Walkerdine warned against the dangers of considering only one sociological category when she wrote: 'It is only the women's movement and the left which splits and fragments our history this way, as though we did not live our class, our gender and our race simultaneously' (Walkerdine, 1989: 206). Instead of fragmenting experience, we need to adopt approaches that facilitate exploration of the relationship between all of these aspects of lived experience and the social and technological structures within which those experiences take place. The concept of intersectionality, I argue, offers such an approach. While debates about intersectionality may be well established in gender studies and other disciplines like cultural studies, and while the value of intersectionality may be given in these fields, this is not the case for feminist STS.

The approach to intersectionality developed by Anthias and Yuval-Davis (1983), in particular, could usefully be applied in this field. Anthias and Yuval-Davis argue against the 'triple oppression' approach that was dominant among black feminists in Britain in the 1980s, proposing that it is not possible to talk about suffering from oppression 'as a Black', 'as a woman', or 'as a working class person', because living as a woman, for example, is always interrelated with other social divisions. They write that, 'Race, gender and class cannot be tagged on to each other mechanically, for as concrete social relations, they are enmeshed in each other and the particular intersections involved produce specific effects' (Anthias and Yuval-Davis, 1983: 63). Consequently, Yuval-Davis and Anthias criticize additive approaches to intersectionality (which ask, for example, what happens to gender when race is added) and argue instead in favour of constitutive approaches (which think about gender as constituted through race, class and other aspects of identity), and which acknowledge aspects of identity as indivisible from each other. They argue that 'all three divisions are intermeshed in such a way that we cannot see them as additive or prioritise abstractly any one of them' (Anthias and Yuval-Davis, 1983: 68). As I argue later, the comments of the women I studied and their resistance to classification according to singular categories like gender, race or class confirm that a constitutive rather than additive approach is needed, because it acknowledges intersecting identity positions as dynamic, contingent and 'producing specific effects'.

Furthermore, the intersection of a particular ethnicity with a particular gender and class is experienced *subjectively* by individual women. The subjective responses of individuals to particular identity positions is a concern of Carolyn Steedman in *Landscape for a Good Woman* (1987), a systematic attempt to explore the usefulness of theoretical frameworks, such as Marxism and feminism, for understanding an individual's lived experience of the social structures that the frameworks claim to explain.

Steedman sees Marxism's conceptualization of class as a political and economic experience as inadequate for explaining her mother's *subjective* experience of her class position, such as her envy and her desire for a better life. Steedman argues that, in order to address the concerns she raises, the aim of social research should not be to draw generalized conclusions with which to theorize the lives of many, but to understand the many and varied ways in which individuals experience and negotiate the social. The aim, therefore, is not to universalize and subsequently simplify, but to specify and then render complex. Steedman sums up this endeavour as follows:

> . . . once the landscape is detailed and historicised, the urgent need becomes to find a way of theorising the result of such difference and particularity, not in order to find a description that can be universally applied (the point is not to say that all working-class childhoods are the same, nor that experience of them produces unique psychic structures) but so that the people in exile, the people in the long streets, may start to use the autobiographical 'I' and tell the stories of their life. (Steedman, 1987: 29)

My argument here is that, although there has been work in feminist STS to detail and historicize our social landscapes, this is often done through the kind of fragmentation of identity that Walkerdine criticizes, which results in homogenizing conclusions about women and technology. In response to this problem my purpose in the remainder of this article is to contribute to the endeavour of 'doing intersectionality in feminist STS' through a focus on the experiences of 14 working-class women from ethnic minority communities with new, networked PCs in their homes. Their experiences, I argue, confirm Walkerdine's assertion that different aspects of identity are 'lived simultaneously' and suggest, therefore, as Anthias and Yuval-Davis do, that a constitutive approach to intersectionality is needed. They also demonstrate the importance of avoiding generalized conclusions about women's relationships with technology. I draw on a project I call 'Project Her@' (after the Greek goddess Hera, worshipped by women at every stage of their lives), which took place in the UK in the late 1990s.[4] Project Her@ was an experiment in the use of computer-mediated distance learning to enhance access to university education for women from disadvantaged backgrounds. In the next section, I introduce Project Her@ and reflect on some of the methodological issues that arise from the particular characteristics of this project. I then discuss the Her@ students' experiences with their computers, examining the variety of ways in which this seemingly homogeneous group constructed their own identities and interacted with their PCs.

ABOUT PROJECT HER@

Project Her@ aimed to respond to a range of inequalities in a region of the UK described as 'one of the most remarkably underdeveloped and deprived zones in the affluent South East [of England]' (Hall, 1991: 7). These inequalities included the area's economic disadvantage, limited take-up of higher education and subsequent high unemployment. Project Her@ also coincided with a number of policy documents in the UK that encouraged the use of new technologies to widen participation to higher education for disadvantaged communities. The extent of the digital divide at the time of the project meant that many inhabitants of the region were unlikely to have access to digital networks. It is within this social, economic and policy context that Project Her@ was developed.[5]

Project Her@ grew out of an established foundation course that offered women who had been out of education for some time the opportunity to improve study and communication skills, and which guaranteed its students places on technology studies degrees upon successful completion. Both the foundation course and the degree courses to which successful students could progress aimed to develop technical skills in media, multimedia or IT, as well as their critical understanding of the complex relationships between the technical and the social, from an STS perspective. Project Her@ developed a variation of the foundation course that explored alternative means of delivering the programme, using new technologies. It was felt that some women might be more able to set aside time for study at unconventional hours of the day or night and that flexible, distance-learning approaches might attract a group of women otherwise unable to commit to full-time study. The project funded the purchase and installation of PCs that were loaned to students for the duration of the course, as well as subsidizing students' online time and technical support phone calls.

The Her@ course was delivered partly by computer-mediated distance learning. The distance-learning element (entitled 'Exploring Technology: Bringing it All Together') provided a flexible learning environment that allowed interaction between learners and tutors to take place at times convenient to both parties and that did not require tutors to be available at the same time as learners. It required students to keep private diaries of their techno-experiences and to draw on these diaries to produce assessed pieces of writing about their learning, which were also used as research data.[6] Clearly, using work that has been submitted by students for educational assessment as research data has methodological implications. The themes of 'Exploring Technology' will have influenced, shaped and produced the autobiographical reflections of the students, to some extent, and the assignment questions and assessment criteria will also have influenced what students wrote and how they wrote. However, there are many

advantages to asking Her@ participants to produce reflective narratives in this context. Encouraging research subjects to recount their autobiographical stories places an emphasis on the research subject *telling* rather than the researcher *asking* and acknowledges the validity of research subjects' own self-knowledge. Graham claims that in such stories, there is a fusion of data and interpretation that research subjects are encouraged to supply – the stories provide 'the interpretative framework through which the data are constructed' (Graham, 1984: 120). Difficult though it may be to devise mechanisms to grade students' autobiographical writing, on Project Her@, it nevertheless proved a rich source of data about experience and of reflection on experience.

Anthias and Yuval-Davis' (1983) claim that particular identity intersections produce specific effects resonates with the proposal made elsewhere within feminist scholarship, that researchers need to make explicit their own location within the research in order to situate the knowledge that is produced (e.g. Haraway, 1991a; Harding, 1991; Skeggs, 1995). In this context, my location within Project Her@ is another feature of the research process that needs to be outlined. First, I was a teacher. The narratives that I use as research data here were submitted to me for assessment; I graded them, corrected grammar and returned them to the students, along with feedback. Second, I was a *virtual* teacher, as I delivered the distance-learning element of the course. Because my virtuality seemed to mean that, for some students, as Miller suggests, I was 'a somewhat shadowy figure, more cyborg than flesh-and-blood creature' (Miller, 2001: 201), it was more difficult to establish the element of trust that is essential to all learning environments (MacDonald, 1995) in this virtual setting than is usual in face-to-face settings. Third, I am white,[7] whereas the Her@ students come from a range of diasporic communities, including African, Caribbean, Asian and South American, and have diverse ethnicities.[8] Although the Her@ students and I share gender identities, the claims once made by some feminist researchers that power differences in relationships between the researcher and her research subjects can be overcome as a result of their shared gender (e.g. Oakley, 1981) are clearly called into question by some of the discussions I have outlined earlier in this article. Such claims split and essentialize identities in the way that Walkerdine, Anthias and Yuval-Davis and others criticize, and they ignore differences – indeed, ignore intersectionality. Although it is not the focus of this article to explore in full the ways in which my social location shaped the research, these details form an important part of the context in which the research data was produced, data to which I now turn.

DIVERSITY AND DIFFERENCE IN A DIGITAL WORLD

As Project Her@ was aimed at women marginal to populations who have easy access to studying at university and to ICTs, the research team expected a significant number of the students to be from ethnic minority communities and to be mothers, perhaps single mothers. In the event, all 14 students were from ethnic minorities, as already noted, all were mothers, most were single parents and all but one lived in the neighbouring area. This very brief description points to the similarities among the Her@ students: their race, their gender, their class, their roles as mothers, their status within relationships and their geographical location. However, it hides their differences and constructs their identities in a way in which they may not. In order to reflect on the diverse ways in which the Her@ students constructed themselves, it is useful to consider some of the answers that they gave to our initial question to them in the individual interviews we carried out half way through the course – 'Can you start by telling me a bit about yourself?' – which aimed to give students an opportunity to define their own identities:

> I was born in Zimbabwe, I am in my early twenties, I am a single parent and I have a son. (Bella)
>
> I think I am a bit of a cocktail; I am very out-going and bubbly, at the same time on the other hand I can be quite closed in, alienated from people. (Champagne)
>
> I originally come from Chile in South America, I've been living in this country for the last 23 years and I've always been working. (Gina)
>
> First and foremost I am a mum, I think that's my most important job of my whole life so that reflects on a lot of things I did in life. (Lorraine)
>
> Well I am Bangladeshi in origin, I have got four children and a husband. (Noori)
>
> Black African, female, I don't know, I am an environmentalist, I believe in equality and equal opportunities. (Roni)
>
> Before I began the course I was just a normal housewife with three children and the normal problems that every person experiences especially when you are a single parent. (Rosie)
>
> I am a mature student. (Tessa).

Although there are a number of problems in reproducing only the first sentence of each student's response as I have here (the qualifying and illuminating comments that some of them went on to make have been

curtailed and the fragments are not fully representative), it is nevertheless possible to draw some conclusions from these brief quotations. Most significant are the multiple and intersecting aspects of identity to which the students refer, including nationality, race, gender, role as mothers, status within relationships, personality, age, educational status, occupational status and political beliefs. The responses reveal real diversity among the students, despite their similarities as working-class women and mothers from ethnic minority communities. In these quotes, every student refers to more than one aspect of her identity – even a simple response like Tessa's 'I am a mature student' refers to both age and educational status. The intersection of identity positions indicated here continued to be a theme in the Her@ students' written reflections, spoken interview responses and multimedia representations of themselves in their homepages. The quotes demonstrate that it is not useful to characterize the Her@ students or their experiences with computers according to singular social categories such as gender, because their identities are more complex than this. While the description 'working-class women from ethnic minority communities' is more specific, it is still limited, because of the *subjective* choices that the students made about which aspects of identity to highlight in this specific interview context.

Perhaps it was an awareness of the intersectionality of their identities that led many Her@ students to resist defining themselves or tying themselves down to labels. This resistance can be seen in the exchange that took place between Roni and her interviewer immediately following her brief statement about her identity:

> *Roni:* Black African, female, I don't know, I am an environmentalist, I believe in equality and equal opportunities. Is that the kind of stuff that you need?
>
> *Interviewer:* Yes. Anything else?
>
> *Roni:* Yes, definitely, I thrive on honesty; I cannot stand liars like most people. I am 29 going on 30, I have one child, a daughter, she is seven going on 30. We live alone.
>
> *Interviewer:* Anything else?
>
> *Roni:* I am from Northtown, I have been in Southtown[9] for two years and I am a student.
>
> *Interviewer:* And that sums, you think, everything up about you?
>
> *Roni:* Yes, off the cuff it does, it doesn't sum me up, but you have caught me unawares. I am not very good at describing myself anyway. I don't really know how far to go.

Roni demonstrated the difficulty she experienced defining her identity in her failure to provide a description with which she was satisfied – she says that the definition of herself that she gave 'doesn't sum me up'. Such

opposition to labels and to attempts to mobilize essentialized categories in relation to their identities was frequently demonstrated by Her@ students. For example, in one activity, students were asked to describe their ethnic identities, consider what technologies are usually associated with their ethnic communities and then search the web for sites that reflected back to them their definitions of their own ethnicities. They reflected on this task in the following ways:[10]

> I have got so much mix I cannot define my race because I would have to describe all races, so I don't see why it has to be defined. (Champagne, interview)

> I not only define myself as Black British . . . but also feel fed-up of having to explain to people that I am not West Indian and that I do not adopt my parents origins as my own. (Champagne, written reflection)

> I never had to think about what do I see myself as, I just am whatever. I don't wish to label. I have a problem with labelling myself as something just for someone else's benefit. I have never had to. People like that will label you as whatever they want to see you as, it's not my problem. It's strange and I think people's perceptions are strange because they are very different from yours. (Askari, interview)

> [The web search] was a difficult task for me in as much as I am not really into discussing or reflecting on ethnicity just for the sake of it. I have always reflected around political issues. I also believe that gender and class are important, although I feel that my being black is the first issue for me. (Teti, written reflection)

Champagne, Askari and Teti displayed mixed feelings about racial and ethnic categories and classifications in these extracts, and none of them found the activity of defining their identities along racial grounds alone straightforward or useful. Champagne problematized racial labels, but also provided them, describing herself as 'Black British'. She appeared simultaneously to resist the labels that others might want to impose upon her and to acknowledge the importance of her race and her nationality in her life. For Champagne, her nationality is inseparable from her race; her nationality has to be fought for – she has to persuade people that she is British – *because of* her race. Askari refuses to label or define herself according to her race at all. She appears to acknowledge what Kolko et al. define as the 'social constructionist view of race' (Kolko et al., 2000: 2) – that is, the mapping of meaning and difference onto physical traits that are then used as a basis for discrimination – while at the same time also acknowledging that the social construction of race has real effects on real people. Although Teti prioritizes race above other aspects of identity when she says 'my being black is the first issue for me', she contextualizes this both with an acknowledgement of the importance of other aspects of identity

and an expression of frustration at having been asked to focus on ethnicity to the exclusion of these intersections. This resistance to racial labelling can be seen as evidence of the students' awareness of their identities as intersecting and difficult to pin down – in which different aspects of identity are 'lived simultaneously', to use Walkerdine's term. Furthermore, Champagne's discussion of the relationship between her race and nationality points to the ways in which these shape each other – her race places a question mark over her nationality[11] – and so suggests that, in order to understand her positioning, a constitutive approach that sees identity positions as interwoven is needed, of the kind proposed by Anthias and Yuval-Davis.

For these students, the identity issues they raised made the completion of the task in hand both difficult and dissatisfying – indeed, their comments call into question the very nature of the task.[12] In a written reflection, Bella considered the relationship between her intersecting identity and technology more generally:

> Albeit I am Black, I am not aware that I am a minority member in all situations. I am a woman but not necessarily conscious of my femininity all the time. I am working class but this does not deter me from having what could be deemed as middle-class aspirations. The point being that the socio-economic attributes assigned to me are undeniably elements of who I am but my concept of self and therefore my experiences and identity go deeper than this. Far from agreeing with the assertion that technology is impinged outside of society and is inherently independent or neutral I nevertheless recognise that as an individual I have the ability to create my own path. I have been and will continue to be inspired by the unsung Black and female innovators that have managed to make technology their own. (Bella, written reflection)

Bella demonstrated how some of the identity positions she occupies – working-class, black, woman – interconnect with other aspects of her self – psychology, politics – to produce her particular relationship with technology. Her subjective experience of her gender, race and class therefore shaped her feelings about technology. Aware of the social construction of technologies that often excludes people like her, she is also conscious that, through her own agency she, like other black women before her, might be able to find ways to include herself. Emphasizing the importance of agency in this way, Bella, like Kolko et al., acknowledges that these social constructions, of identities and technologies, are 'phantasmatic effects of culture, rather than simple and stable facts of biology (in the case of race) or technology (in the case of cyberspace)' (Kolko et al., 2000: 10–11). In other words, to return to Henwood, they are unstable, dynamic, produced in particular moments, contingent upon other factors like individual agency, and therefore open to change.

Because identities and technologies are both social constructions that

are produced in particular moments, in their reflections about their uses of their PCs, the Her@ students referred to different identity intersections at different times. Reflecting on the question of representation on the web, Tessa demonstrated how her nationality, race and gender intersected in her online experiences. She wrote that, although she found websites that spoke to her racial and gender identity – a site about a magazine called *Black Woman* for example – these did not reflect the full complexity of her identity, including her nationality, and she appealed for more web publications about issues faced by black women in Britain. At another moment, discussing Internet chat, she indicated the financial constraints she experienced as a working-class single mother. She wrote that, 'Unlike a lot of people who use the e-mail as a chat line, I find that due to the expense I have not got the time to get on-line to chat.' In their enthusiasm for chat, Sasha and Askari pointed to the intersection of yet another aspect of their identities, their youth, with their class. Sasha got so addicted to chatting that she received an expensive telephone bill that used up the annual subsidy we provided her in one quarter, and Askari wrote that, in order to participate in chat, it is necessary to have 'a spare "grand" stashed away to deal with the huge increase in your phone bill!!!' Other students wrote about their efforts to combine their responsibilities as mothers and as students. Noori's homepage reflected on the difficulties she experienced fulfilling the conventional expectations of a Muslim wife and mother while studying. She wrote that:

> During Ramadan I used to wake up to cook at 3 or 4 a.m. and not go back to sleep again because I would not be able to wake up to take the children to school or go to class. I used the time wisely, though I managed to get the revision done for the exam, sometimes I would almost miss the Fajar (dawn) prayer because I was on the computer. (Noori, homepage)

Throughout the duration of the Her@ course, the students experienced emotional highs and lows in the face of their machines, and they discussed these feelings in relation to the intersecting aspects of identity already highlighted in this article. Their feelings changed over time, as enthusiasm and determination sometimes gave way to frustration and despair when the computers did not respond as required. However, there was no neat chronological development in the students' feelings, as different emotional extremes surfaced at different times. For example, the following two extracts reflect on the moment in which the computers arrived in their homes:

> I watched them pull everything out of the box. How did I get on, well, I was off to a bad start. As soon as they left I rushed up the stairs excited like a kid who had been given a new toy. The Computer was waiting for me to press & explore I was very eager to explore. After seeing the cursor moving

> around on the screen, I made an opinion that it was designed for men. It must be like a game to them. So did I give up, I suppose?. Not me? when the going gets though [*sic*], I get inspired to succeed. . . . At [one] moment there was panic, impatience, I turned the power off, took an hour break. . . . However, I managed to perform my task and shut it down, as a result I felt a sense of achievement. (Chimwe, written reflection)

> I'm amazed at how excited I actually am about receiving the computer. Ironically it is like having a child. . . . The liberation I feel is astonishing, especially having access to the Internet being 'online' has in the past been inaccessible to someone in my socio-economic situation. I can already see how people become addicted to this technology, it is a tool that with the use of logic and patience can be mastered. Even though 'femininity' implies that I should have some deeply embedded fear of the computer I look forward to the challenge. Different women have a variety of approaches to technology as well as a varying degree of skills and competencies. (Bella, written reflection)

In her discussion of the range of feelings she experienced in her initial encounter with her computer – excited, inspired, panicked, impatient, a sense of achievement – Chimwe focuses primarily on one aspect of identity – gender. Initially she adopts a somewhat simplistic position in which technology is perceived as masculine, which is then rendered more complex by her expressed determination to succeed in dominating her machine. This suggests that despite equating technology with masculinity, Chimwe does not feel that the only 'gender-authentic' or 'gender-available' (Kleif and Faulkner, 2003: 296) option for her as a woman is exclusion; she also sees *inclusion* as gender-available. As in the earlier extracts from Bella, while her reflection acknowledges greater complexity in socio-technical relations, referring implicitly to a wider range of identity positions through reference to her 'socio-economic situation', she also identifies technical competence and inclusion as an option for someone in her gender, racial and class position. Bella's subjective response to the interaction of her gender, race and class in relation to ICTs – her determination to succeed despite dominant discourses of exclusion – constitutes the kind of 'non-representative' gender–technology relationship that Landstrom (2004) argues feminist STS needs to address. In their article about men's pleasures in technology, which, like this article, also highlights subjective experiences of technology as an important focus for research, Kleif and Faulkner ask why it is that 'some boys and men take such pleasures in technology and that most women either do not experience such pleasures or tend not to own up to them if they do' (Kleif and Faulkner, 2003: 310). Understanding gender as constituted through race and class and experienced subjectively by different women renders problematic Kleif and Faulkner's question, because it highlights the difficulty of talking at all about 'most women'. The experiences of Chimwe, Bella

and the other Her@ students demand that feminist STS acknowledges variation, difference and contradictions among women (Landstrom, 2004) and women's many and varied subjective experiences of technology.

CONCLUSION: SUBJECTIVE INTERSECTIONS AND DIGITAL DIVERSITY

In this article, I have argued that, despite the efforts of some scholars, and despite Haraway's original construction of the cyborg – one of the mascots of feminist STS – as a racially as well as sexually hybrid figure, systematic consideration of the intersections between gender, race, class and other aspects of identity has not taken place in feminist STS. Therefore, it is useful to turn to feminist scholarship from the 1980s for conceptual tools with which to undertake this endeavour. Building on Walkerdine's claim that different aspects of identity are 'lived simultaneously', I have argued that the constitutive approach to intersectionality proposed by Anthias and Yuval-Davis is particularly useful – that is, an approach which acknowledges that all social categories (race, gender, class and more) are experienced in relationship to and constituted by all other social categories. Furthermore, I have suggested that individual women's subjective experiences of their gender, race and class in relation to technologies like networked PCs are an important focus for research, because they reveal the many and varied ways in which individuals negotiate these technologies.

In the case of Project Her@, a seemingly homogeneous group of women – working-class mothers from ethnic minority communities who live in an economically disadvantaged region of the UK – experienced their identities in the face of their machines in different ways. They referred to diverse and intersecting aspects of identity in their self-descriptions and some of them resisted defining themselves or being tied down to labels, pointing to the inadequacy of available categories. Some of them problematized the prioritizing of one aspect of identity, like race, above others, and most referred to a range of identity positions at different moments in their reflections. Other Her@ students acknowledged that despite the social construction of technologies, which often excludes people like them, their subjective choices and own agency made digital inclusion an option for them. The enthusiasm, determination and pleasure that some students expressed call into question the suggestion that most women do not have these experiences of technology and demand that we take account of difference among women, even among a small group of working-class ethnic minority women who are all studying the same course, in the same place, at the same time.

Project Her@ was born out of a belief that factors like race, gender and

class serve to include some and exclude others from 'the information society'. As working-class women from ethnic minority communities, digital inclusion may have been inaccessible to the Her@ students without the project, as Bella pointed out. Indeed, the determination to dominate their machines that some students expressed may well have been a response to these socio-economic conditions. The argument of this article is that feminist STS needs to do two things in order to account for this range of factors and avoid generalized or homogenizing conclusions about gender and technology: to take on board the concept of intersectionality and to consider the subjective ways in which women experience their intersecting identities in relation to their machines. In this article, I have attempted to contribute to this endeavour, empirically as well as theoretically.

NOTES

1. Terry and Calvert's edited collection is just one of many which have been produced in recent years that aim to bring together key works or address key themes in feminist STS – others include Green et al. (1993), Green and Adam (2001), Henwood et al. (2001), Kirkup et al. (2000) and Lie (2003).
2. This is something that Kolko et al. (2000) point out in their introduction to *Race in Cyberspace*, one of few academic texts that address race–technology relations.
3. Clearly, feminist STS incorporates a diverse range of practices and approaches and is not a coherent and unified field. Nevertheless, there is little discussion of intersectionality in the field. This is also the case for STS in general, but my focus here is on feminist STS.
4. I worked on Project Her@, which was funded by a British Telecommunications PLC University Development Award, with Linda Leung and Nod Miller.
5. For further discussion of the context of Project Her@, see Miller et al. (2000).
6. A condition of acceptance onto Project Her@ was that students consented to our use of some of their assessed work as research data and to participating in interviews with us – indeed, the students chose their own pseudonyms for research purposes. Interviews were carried out with Her@ students half way through the course, after they had completed it and just under three years later. I draw on the students' written narratives about their techno-experiences and on interview material in this article, as well as including one quote from a student's homepage.
7. It is worth noting that of the four tutors on the Her@ course, I was the only white person.
8. Although I am white and the Her@ students are all non-white women living in a majority white country, it is not the case that Her@ students share one racial identity. Acknowledging that the terms race and ethnicity are complex and contested, in this article I use the term race to talk about socially constructed classifications that are used as a basis for discrimination and oppression (see Kolko et al. [2000] for more detailed discussion) and I describe the Her@ students as being from ethnic minority communities, in

contrast with the 'white British' ethnic majority, and in keeping with official terminology (see Commission for Racial Equality, at: www.cre.gov.uk/).

9. These place names are fictional.
10. I have retained the original spelling and grammar from students' written reflections.
11. See Gilroy (1987) for a discussion of the complex and contested relationship between race and nationality.
12. For more detailed analysis of students' responses to this exercise, see Leung (2003).

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