The implications of a critical agenda in gender and IS research

Debra Howcroft* & Eileen M. Trauth[†]

*Manchester Business School, University of Manchester, Booth Street West, Manchester, M15 6PB UK, email: debra.howcroft@manchester.ac.uk, and [†]School of Information Sciences and Technology, The Pennsylvania State University, University Park, PA, USA, email: etrauth@ist.psu.edu

Abstract. *This paper explores the nature of the critical agenda and endeavours to advance the critical debate by considering a particular case in point: gender and information systems (IS) research. It does so by drawing upon Chua's classic framework of outlining philosophical assumptions underpinning research and also by building upon prior work of the authors on the interconnections amongst research topic, epistemology and methodology. Specifically, it presents an argument for the benefits of adopting a critical perspective when studying gender and IS research, illustrating the additional insights that can be generated. These benefits and insights can also be mined from other areas of IS research.*

Keywords: critical research, gender and IT, women and technology

1. INTRODUCTION

Increasing interest is being shown in information systems (IS) research in adopting a critical perspective. The so-called 'paradigm wars' of the last 20 years witnessed a debate which primarily focused upon the differences and appropriateness of positivist and interpretivist research. As critically oriented research gains increasing legitimacy, we also note substantial differences amongst positivism, interpretivism and the critical perspective. With recourse to gender and IS research as an illustration, we argue that epistemology, theory, and methodology are inextricably interchanged. We also suggest that the application of a critical agenda to this area of study would yield different research results, which could add to existing understanding of the topic. These insights could equally be applied to other areas of IS research.

This paper builds upon prior work of the authors on the interconnections amongst research topic, epistemology and methodology. Specifically, it extends an argument put forth by Kvasny *et al.* (2005) about the connection between a particular topic (in this case feminist, gender research in IS) and the epistemological and methodological implications that follow. It also

builds upon prior work (Howcroft & Trauth, 2004), which demonstrates the ways in which the conduct of the research and its findings change when the epistemology shifts from positivist to interpretive to critical.

The objective of this paper is to explore the implications of the adoption of a critical agenda, using gender and IS research for illustrative purposes. The topic of gender was chosen for both theoretical and empirical reasons. It was chosen for theoretical reasons because the notion of emancipation is fundamental in a range of critical intellectual traditions (Hirschheim & Klein, 1994; Cecez-Kecmanovic, 2005) with a desire to freeing individuals from power relations around which social and organizational life are woven (Fournier & Grey, 2000). Feminist research shares with the critical perspective the commitment to social change and links with other emancipatory struggles against oppression. The enduring inequalities in men's and women's relationship to technology require explication as part of the emancipatory project. This topic was chosen for empirical reasons because of the experience of the authors in the conduct of gender and IS research.

This paper is organized as follows. First we outline the philosophical assumptions of a critical perspective, discussing the relationship between epistemology, methodology, and research topic. Then we go on to illustrate the way in which a critical agenda applied to research on gender and IS would yield additional insights and different research results. This is accomplished by turning a critical eye on a current research project being conducted by one of the authors. The following section then goes on to discuss the implications of applying a critical perspective to gender and IS research. We conclude by discussing the theoretical and methodological contribution of this paper.

2. THE ASSUMPTIONS OF A CRITICAL PERSPECTIVE: GENDER AND IS RESEARCH

This section discusses the relationship between epistemology, methodology and research topic. In order to frame the discussion, we draw on Chua's (1986) framework which outlines the philosophical assumptions that underpin the conduct of research. This framework laid the foundation for Orlikowski and Baroudi's (1991) seminal paper, which detailed the research approach and assumptions for the conduct of IS research. Given its familiarity with an IS audience, we therefore use this as an organizing framework.

The framework is based on the three general categories of (1) beliefs about knowledge, (2) the empirical world, and (3) the relationship between the two. For the purpose of this paper, we focus on the elements that frame a critical perspective and illustrate how it changes both the problem definition and solution (for further details of how this framework relates to positivist and interpretivist perspectives in IS research, see Orlikowski & Baroudi 1991). In this paper we focus not only on its difference as compared to positivist and interpretivist IS research, but also consider its potential to enrich and enhance our understanding of IS research and the contexts within which it is situated. We now refer to each of the elements in turn and discuss them in the context of the gender and IS research illustration.

2.1 Beliefs about knowledge

For critical researchers, the ways in which scientific explanations are judged is fluid and temporal, situated within social and historical practices. Rather than focus on theory testing, the aim is to understand social phenomena in its historical, political and economic context. One of the most compelling epistemological insights from feminist research is that the legitimation of knowledge claims is intimately tied to networks of domination and exclusion (Lennon & Whitford, 1994). Research takes place in a political context, whereby agendas and funding priorities are set by the powerful, giving rise to preferences for particular policy issues (Oakley, 2000). Decisions about the details of the research – what kinds of experiments to do, which instruments to use and what kind of interpretations to make – reflect the local circumstances, opportunities, beliefs and value systems (Latour & Woolgar, 1979; Knorr-Cetina & Cicourel, 1981; Pinch & Bijker, 1984; Latour, 1987). Similarly, research findings are not disseminated within a political vacuum, which is one of the reasons why some are seen as uncontentious and embraced wholeheartedly, while others simply fall by the wayside.

Arguably, research findings that augment the status quo are accepted far more readily than research that questions and challenges the status quo and powerful vested interests. While many mainstream accounts seek to justify organizational and technological imperatives as natural and/or unavoidable, critical research challenges rather than confirms that which is established, and encourages dissent rather than accept surface consensus. This critique of tradition (Mingers, 2000) endeavours to upset existing patterns of power and authority. Critical research questions and deconstructs the taken-for-granted assumptions inherent in the status quo, and interprets organizational activity (including IS) by recourse to a wider social, political, historical, economic and ideological context (Doolin, 1998). Described as the sharing amongst critical researchers of oppositional tendencies (Grey, 2005) this manifests as 'oppositional to established power and ideology; to managerial privilege; to hierarchy and its abuse; to put at its most generic, not only the established order but the proposition that the established order is immutable'. This highlights the areas of commonality that draw critical researchers together and underlines critical research as a political project.

Turning our attention to gender and IS research, we see numerous research papers (e.g. Truman & Baroudi, 1994; Igbaria & Baroudi, 1995; Gefen & Straub, 1997; Igbaria & Chidambaram, 1997; Gorriz & Medusa, 2000; Venkatesh & Morris, 2000; Ahuja, 2002) that tend to essentialize gender characteristics by viewing men's and women's characters and behaviour as fixed, predetermined and 'natural'. This type of research – referred to as the 'gender-as-variable' approach (Alvesson & Skoldberg, 2000) – is open to charges of reproducing and reinforcing well known stereotypes, underlining popular beliefs that characteristics associated with men are more valuable than characteristics associated with women, thus confirming rather than challenging gender inequalities. This type of research views gender as something that is unproblematic and indisputable, just another variable to add to the mix. It therefore sees male and female as autonomous categories, neglecting the effects of class, ethnicity and age, for example.

Feminist authors such as Adam (2002) claim that these statistical gender difference studies are offensive to both men and women as they reinforce exiting stereotypes and add little to our understanding of the phenomena of interest. A critical perspective would view this generalization between the sexes, without taking into account any understanding of economic, social or political phenomena (such as the division of labour, recruitment and retention policies, views of leadership, etc.) as naïve at best, damaging to gender research at worst. It would recommend, instead, starting from the recognition that differences in terms of experiences, life situations, and discrimination, should be taken into account.

2.2 Beliefs about physical and social reality

According to Chua (1986), the important concept here for critical researchers is that both humans and societies more generally 'possess historically constituted potentialities that are unfulfilled' (p. 619). Existing systems of domination, such as capitalism, class society and patriarchy, constrain human potentiality and this operates at the level of ideology (consciousness) and also through material and political relations. The role of ideology operates in such a way that it shapes perceptions and preferences that are contrary to the interests of those who hold them. As a result, grievances are not formulated and conflict does not arise. At another level, society is constructed in such a way that rules governing the ownership and distribution of wealth are only accessible to the few. However, despite these constraints, people possess the power to resist and enact social change, and release their unfulfilled potential.

We begin our consideration of a critical perspective on gender and IS with the premise that gender divisions are part of the structure of social life (Adam *et al.*, 2004), that an unequal sexual division of labour exists within organizations (Webster, 1996) and that feminine skills and roles are undervalued (Wilson, 2004). As a result, we see that male jobs are usually better paid and more highly valued than those jobs that are seen as associated with females (Webster, 1996; Alvesson & Billing, 1997; Perron, 2004). In a related vein, we acknowledge that technology is all too often conceptualized in terms of men (Wajcman, 1991) and technological occupations too often segregated along sex divisions as the qualities required to enter the profession and succeed within that profession are closely aligned with masculinity (Wajcman, 1991). Thus human potentiality is constrained through material and political relations and also at an ideological level. In trying to articulate the role of ideology in perpetuating these inequalities, Wilson (2004) illustrates how both men and women play a role in the process of continually undervaluing women's expertise. The ideology that associates masculinity with technology is so pervasive that while men may revel in their 'superiority', women also deny their lack of technological ability. As the literature shows, crossing these cultural boundaries is neither encouraged nor entered into lightly.

The essentialist and determinist perspectives – centred on accounts of innate abilities and characteristics, rather than an understanding of the process of socialization and the gendered roles that arise as a result of this process – are contestable. Sexual divisions of labour do not stand still, but are constantly being constructed and reconstructed through individual and collective action. Women have not passively stood by as technology has been applied to all

spheres of their work; women have engaged in various forms of resistance and other forms of industrial protest. Technologies and the gender structures that contribute to the shaping of women's work, then, are mutually constitutive. Neither of these is autonomous, immutable or determinate. Both are the outcomes of social arrangements, with their roots in past human practice.

For Chua, another key idea relates to the notion of totality and the relationship between the whole (society) and its parts (individuals, groups and organizations). Critical researchers argue that we understand phenomena through the totality of relations of which it is a part. Its existence can only be understood by consideration of the relations that surround it. An understanding of the gendering of jobs and technology enables us to show how women come to perform tasks which carry the imprint of their socially constructed roles, both within the family and the workplace (Webster, 1996). The sexual division of labour and women's confinement to sex-typed occupations is in part a product of their position in the home. Domestic responsibilities restrict women's ability to participate fully in the labour market, and shape the kind of work for which women are deemed suitable. More than this, women's role in the domestic sphere is used to confirm and legitimate their marginal status in the labour market. Thus, the gendering of jobs cannot be reduced to a discussion of women in the domestic sphere, but must be seen as arising from the interplay between their socially ascribed, and therefore shifting, roles in both the public and private domains. Therefore, to do research which overlooks this and conceptualizes differences at the individual level in terms of psychological traits (cf. (Venkatesh & Morris, 2000)) is limited as it essentializes these differences at the neglect of considering the underlying reasons for women's absence from the technical sphere (Adam *et al.*, 2004). In contrast to this perspective, we suggest an approach to gender that places structural inequalities between men and women at work and in their relationship to technology at the heart of the analysis.

Finally, for Chua (1986), the belief in human potentiality is supplemented with the study of the historical development of things. This is based on the assumption that if we are to understand the contemporary, we need to also understand the historical. A critical, feminist perspective is informed by a historical analysis of the development and use of technology, as it demonstrates the way that technology comes to have its association with men and masculinity. Women's relationship to technology is viewed as one of exclusion through embedded historical practice, and this is reinforced and reproduced in contemporary work settings. Thus, technology emerges as an upshot of struggles between those with power and those without – between capital and labour, and between men and women. Here, neither technology nor masculinity is 'black boxed', and so it avoids both technological determinism and biological essentialism. By looking at historical practices and the way that male and female relationships to technology have been shaped, this perspective avoids dualist dichotomies. In a study of research papers discussing gender in the IS field (Adam *et al.*, 2004), we see that all of the quantitative studies ignored the extensive gender and technology literature, and there was little evidence of reference to this field even with the more qualitatively inspired papers. To discuss these issues by concentrating on citations from fields such as psychology means the process of technology adoption and usage appears more a product of individual psychology, thus

obviating the need to consider the social structures within which individuals necessarily operate. These more simplistic formulations are disempowering and are at odds with the development of new strategies for addressing women's relationship to technology.

2.3 Relationship between theory and practice

For critical researchers, theory is about exposing and challenging domination and ideology and illuminating how this is manifested within supposedly universal and objective social laws, which merely control people and sustain the status quo. It is intended that this process of analysis may help initiate social change and reform in order to eradicate such inequalities and injustice. When discussing the role of academics, Walsham (Walsham, 2005) argues that for critical researchers the process of engagement is crucial. This implies a sense of moral commitment or duty, especially given our (privileged) role as academics whereby we have the capacity to operate in a comparatively unconstrained way that can challenge the powerful.

Terms such as emancipation, liberation and equality are seen as central to the feminist project, yet the notion of emancipation within critical writings has largely centred upon the Habermasian conceptualization, often at the total neglect of feminist theory on emancipation (Adam, 2002). As a result, it has been argued that '. . . the will for a generalized, non-analysed emancipation is not enough. Indeed, it may serve to reinforce rather than alleviate oppression if it leaves the material conditions that cause the oppression in the first place unexplored' (Adam, 2002, p. 62). Feminist research shares with feminism as a political movement the ideal of emancipation. Therefore, according to this line of thought, academic research on the topic of gender should be *for* women, rather than *about* them (Oakley, 2000). The enduring inequalities in men's and women's relationship to technology require explication as part of the emancipatory project. This requires an understanding of how women can acquire control over the technologies and thus challenge their subordination. As Adam (2002) points out, we must look towards the subordinate groups themselves for an expression of their own emancipatory values through their own knowledge, rather than assume that 'we can emancipate them'.

The issue concerning the relationship between theory and practice clearly links in with the notion in IS research of 'research for whom' that asks the question 'who is our target audience?' This is a contentious debate centred on the issue of the relevance of our research. One problem of relevance stems from the assumption that the key stakeholders are information technology (IT) practitioner managers and the interests of business, rather than the managed – those lower down the organizational hierarchy who are on the receiving end of managerial practice. When considering the existing gender and IS literature, we see numerous recommendations that organizations should attend to their potentially discriminatory practices given that the labour pool could shrink significantly if employers do not take heed (Truman & Baroudi, 1994; Gefen & Straub, 1997; Igbaria & Chidambaram, 1997; Venkatesh & Morris, 2000)). These recommendations look to economic arguments to promote the gender balance rather than a will to promote fairness and equality. Such arguments make no reference to the emancipatory discourse or the emancipatory project; instead, they focus on making recommendations to the elite within organizations.

Relevance is also about whether or not we choose to broaden our focus of study to incorporate a much more inclusive organizational constituency. As Parker (1995, p. 558) comments on his research in organizations:

> I have tried to begin from the assumption that everyone I talked to had an interesting story to tell. No one respondent had a 'truer' account than any other. Male white managers are not 'wrong' and female black workers 'right'. Yet my ethical-political sympathies lie with the latter group because (I feel) that their rewards and power are less than the former.

Perhaps we need to consider the possibility of telling different stories and considering our moral and ethical responsibilities to give voice to a variety of constituencies.

How we achieve this is also an issue of consideration for critical researchers. Chua's (1986) response would be to argue that critical research is not conducted through laboratory experiments; rather, it takes place within the everyday setting of the organizational and societal environment. Thus, qualitative studies such as critical ethnographies and case studies are often the preferred research method.

Recently, McGrath (2005) has raised the question as to whether there is anything distinct about critical IS research. She wondered whether there are any methodological principles specific to this area of research, whether any methodology is suitable for the study of IS or if an exclusive and unique methodology is required. We do not wish to engage in the largely unproductive discussion of the advantages and disadvantages of qualitative and quantitative methods, especially since the arguments have been rehearsed elsewhere. We believe the choice of method should not be made in the abstract, but should be selected according to its appropriateness to the research question and research object. The choice may be purely quantitative, purely qualitative or a mixture of the two (our view is that quantifications can offer value, as long as care is taken in the generalizability of the data).

Whilst it is too simplistic to unequivocally equate a given epistemology with a particular method (i.e. that interpretivists do qualitative research, while positivists do quantitative research) we must remember that different methods emerge from different philosophies and this has important implications for informing and shaping research practice. For this reason, it is important to be reflective about the social and organizational underpinnings of one's own recommendations and practices. As noted elsewhere: 'Method is thus not primarily a matter of "data management" or the mechanics and logistics of data production/processing, but is a reflexive activity where empirical material calls for careful interpretation – a process in which the theoretical, political and ethical issues are central' (Alvesson & Deetz, 2000, p. 5). The central premise of critical research is to aim for a balance between being informed by critical theoretical ideas and a political agenda, and an empirical sensitivity and interest in the discovery of repression.

Giving voice to the silent has been a dominant feminist metaphor (Oakley, 2000). Qualitative research methods, such as face-to-face interviews, observations, study circles and life histories foster closeness between the researcher and the researched. As a result, these techniques are often favoured by feminist researchers as they encourage 'mutual listening' and can

facilitate a connection between the parties involved, thus removing the artificial boundary between the researcher and the researched, between knower and known (Oakley, 2000). In feminist research, a close relationship between the researcher and the subject are seen as important, so that that trust is developed. There is a pronounced interest in ethics, solidarity and reducing asymmetry in the research site and the research is characterized by a commit-ment to the emancipatory project (Alvesson & Skoldberg, 2000). It should also be noted that some of these features are also typical of interpretivist researchers, as well as critical researchers.

This completes our discussion of the assumptions underlying a critical perspective. We now turn our attention to applying the critical agenda to an empirical example of gender and IS research, highlighting the differences which occur as the lens shifts from interpretivism to a more critical approach.

3. APPLYING THE CRITICAL LENS TO GENDER AND IS RESEARCH

In order to explore the implications of the adoption of a critical agenda, we draw on Howcroft & Trauth (2004), which illustrates the contribution of critical research in IS by demonstrating the ways in which the research questions, approaches and findings change when the lens shift from positivist to interpretive to critical. In this section we develop the argument further by considering how the understanding of the research topic itself, the methods and the outcomes might change if the lens shifts from interpretive to critical. Whereas in Howcroft & Trauth (2004) the focus was primarily on shifting the epistemological lens along a continuum from positivist to interpretive to critical, here we focus specifically on shifting the lens from interpretive to critical.

To illustrate the way in which a critical agenda applied to research on gender and IS would change, we turn a critical eye on existing fieldwork. To do this, we consider research that is examining female under-representation in the IT workforce in the light of a critical epistemology.

3.1 Interpretive study of gender and IS

Based upon initial work conducted in Australia and New Zealand (Trauth, 2002; Trauth *et al.*, 2003) a research agenda was developed with the goal of investigating – at the individual level of analysis – the particular ways that women IT professionals in America are influenced by and react to the social shaping of both gender identity and IT. Two specific objectives are directed at the achievement of this overall goal. The first objective is to gain a better understanding of the particular individual and environmental factors that are influencing American women in their professional development and current working lives as IT professionals. The second objective is to develop recommendations for proactive responses by public policy makers, employers and educators.

3.1.1 Interpretive understanding of the research topic

This project is directed at improving our understanding about the under-representation and participation of women in the IT field. The results from this field study of American women, who are successful participants in the IT profession, can be used to support and evaluate current societal interventions directed at addressing the under representation of women in IT.

3.1.2 Interpretive research methods

Three sources of data are used in this project. The primary source of data consists of interviews with women practitioners and academics. Data from practitioners is being collected in three different geographical regions of the US: Northeast (Massachusetts), Southeast (North Carolina) and Mid Atlantic (Pennsylvania). These three locations were chosen in order to increase the variation in socio-cultural and economic characteristics of study participants as well as the variation in participants' work and living environments. The kinds of societal variation that are considered include: racial, ethnic and lifestyle variation; the cost of living; attitudes towards women, women working and women working in IT, and the contribution of the IT sector to the regional economy.

Ninety women IT practitioners evenly divided across the three geographical regions and representing a range of ages, levels of management responsibility, and degrees of technical specialization are being interviewed. In addition, 30 women IT academics are participating in this study. These women are drawn from academic institutions throughout the United States. Academic participants also represent a range of ages, levels in the academic hierarchy and IT disciplines (e.g. engineering, computer science and IS).

The following research questions flow from these objectives:

- To what extent is the American IT field socially constructed as a 'man's world'?
- What are the pressures on American women in the IT field and how do these pressures affect their professional development and working life?
- Does a woman's gender self image affect her participation in the IT profession?
- How do American woman in the IT profession cope with the challenges presented to them?

3.1.3 Interpretive outcomes of the research

The outcomes of this research, to date, include both the articulation of key theoretical constructs (Trauth *et al.*, 2004; Trauth & Quesenberry, 2005) as well as exploration of specific themes. The latter includes: individual differences in the response of women in the IT workforce to work-family conflicts (Quesenberry *et al.*, 2006); the varying influence of social networks on female participation in the IT labour force (Morgan *et al.*, 2004); differences in socio-cultural influences on women in IT (Trauth *et al.*, 2005); and the role of ubiquitous computing in addressing work-life balance issues (Quesenberry & Trauth, 2005).

3.2 Critical study of gender and IS

Now let us turn to a consideration of how this research agenda might change were the epistemological lens to shift from interpretive to critical. First, the goal would change from investigating the reasons for the under-representation by exploring the ways in which women IT professionals in America are influenced by and react to the social shaping of both gender identity and IT. It would change to an investigation of the wider systems of repression at work and an understanding of how the social construction of gender identity is seen as being incompatible with IT. It would also examine the interests being served by creating and maintaining this existing power structure.

3.2.1 Critical understanding of the research topic

The understanding of the research topic would also change. It would shift away from detailed and comprehensive interpretations of interview transcripts, which illustrate individual women's responses to the environmental influences they experience. Instead, it would move towards an attempt to better understand the wider economic, social and political forces that shape this particular construction of differential power.

   In the interpretive study, the focus is on the story of women who overcame the odds, so to speak, to make it in this male domain. In a critical study, the focus would be on the story of explaining why the odds are stacked against women to begin with. One criticism often levelled at interpretivist research is the failure to explain unintended consequences of actions (Doolin, 1998). So, for example, in the case of gender and the IT workforce, despite policy moves to encourage female representation, many women are voting with their feet and prefer to opt out of this profession, rather than persevere. One way to approach this – from a critical perspective – would be to understand and explain this in the wider social and economic context of capitalism, gender relations and the family. Whereas with the interpretive study, the results are intended for use in supporting and evaluating interventions directed at both women and the societal context, a critical study shifts the focus from how an individual woman copes to uncovering the system of relations at work that create the need for women to cope. The resulting critical understanding of the research topic would change from articulating key influencing factors affecting women and individual ways they overcome these, to showing issues of a structural and ideological nature that may frame the experiences that hold women back and serve to reproduce inequality.

3.2.2 Critical research methods

Given the change in project goal and understanding that is sought, the way in which the research is carried out would change as well. While the same qualitative methods – interview, participant observation and document analysis – would still be used, they would be employed differently. Two examples illustrate this. First, the move from an interpretive to a critical epistemology would also imply a change in the researcher's relationship to those being

studied. In an interpretive study, the researcher elicits the woman's unfolding story of being an IT professional. While the researcher can empathize with the participant's struggles, nevertheless, the focus of attention is the subjective understanding of the woman's experiences. In contrast, in a critical study the power relationship between the researcher and the researched is taken very seriously, so that people are not treated as research 'objects'. As this power relationship is inevitable in any research situation, it could be approached in a different way. Based on suggestions from feminist social scientists (Stanley & Wise, 1993) one way to approach this could be that the researcher makes herself vulnerable in the process – by displaying emotions, actions, reasoning, deductions and evidence to other people and thereby making it apparent to others how the researcher constructs what goes on. By making the situated nature of research the very basis of the work, it allows the researcher to become located in the process itself, rather than write about the experiences of others as though they were directly available to them.

For example, one line of discussion in the interviews concerns social networks. In an interpretive study, the interviewer inquires about groups of people – both men and women – who provide support, encouragement, information and mentoring to the participant in her workplace. But in a critical study, the interviewer would probe deeper to explore possible gender segregation in social networks, such as the existence of a 'boy's club' from which she might be excluded and the resulting differential effects on men's and women's careers in her workplace. In this way, the researcher could make use of her own experiences, especially if the researcher does not fit the traditional mould of the 'male, white, heterosexual, middle class' academic. It is possible for the researcher to make good use of examining her own experiences, even though few accounts of this find their way into research reporting. For people who live these conflicts and contradictions as part of their everyday experiences, they see the world in a different way – different experiences happen to us, people relate to us differently and we relate to them differently.

Second, whereas in an interpretive study the researcher is not partisan, but rather works to understand the woman's experience on her own terms, in a critical study this is not the case. Arguably, a key element that underlines critical research is that it is a political project (Grey, 2005) and complementary to this, a central tenet of feminism is that 'the personal is political'. Engagement in the research process reveals that the personal is not only political, but is the crucial variable, which is present in each and every attempt to do research (Stanley & Wise, 1993). We cannot separate ourselves as researchers from what we experience as people and therefore it is not possible as a feminist to do research on gender in the workplace and not be touched by this. As an example, consider the interview dynamics associated with the topic of feminism. Because of the number of times women in the prior research prefaced comments with 'I'm not a feminist, but . . .' this question is being explicitly asked in the American study. In one interview a woman volunteered information about discrimination she experienced in university, in her internship and in her first job. She described how she was being treated unfairly based upon her gender. But later in the interview when asked if she considered herself to be a feminist she said 'no'. The reason she gave was that she wants to achieve success based upon her performance and not be treated differently because she is a woman. In a

critically oriented interview situation the researcher would use this as an opportunity to explore the contradictions about structural inequality that was reflected in this response. In the interpretive interview, the researcher simply nodded and said nothing.

In sum, the researcher's stance in critical gender and IT research would shift from empathetic observer of the participant's life. Instead she or he would frame the study within the broader context of power constraints, repression, social asymmetries and technological determinism. However it is important to go beyond simply re-stating capitalism, the family or patriarchy as reasons for oppression. The material forms of oppressions differ and some basic empirical research is needed to describe the varying nature of this. Until we are aware of how and where the oppression occurs – in the context of our different everyday experiences – we cannot find how to avoid its occurrence and achieve social change.

3.2.3 Critical outcomes of the research

Finally, the intended outcomes of the research would change from understanding, articulating and explaining the factors that enhance or inhibit women's participation in the IT profession. Instead, the focus would become the structures of oppression that prevent women from equal participation. Armed with descriptions of the varying nature of oppression, we could begin to affect many small changes in seemingly insignificant aspects of our lives. Beyond this, an outcome of the research would be to outline a broader agenda that advocates women's emancipation from this situation of inequality.

Since the researcher's commitment to social change would enter into the mix when the critical lens is employed, the outcomes would not only contribute to theoretical insights but also to practice. The theoretical insights would be used to help challenge many of the gender assumptions, beliefs and discourses that permeate the IS discipline. It would help to explain the under-representation of women in IT in terms of socio-cultural forces, which individual women respond to in a variety of different ways. It could also be used to explain the power agendas at work within the broader societal context that are holding women back. These theoretical insights can provide explanatory power to aid understanding of their experiences in the field and, in the words of Eagleton (1996, p. 5): '. . . the knowledge necessary for them to understand their own condition more deeply, and so to acquire some of the theoretical armoury essential to change it'.

The implications for publishing the results would be significant, as well. Whereas papers that reflect the incremental development of interpretively developed theory may be increasingly well received, those that endeavour to disrupt the status quo and challenge existing power relations in the profession and in wider society, may not.

The exercise conducted in this section could easily be applied to the positivist gender and IT literature that has been discussed earlier in this paper. That is, instead of the epistemological lens shifting from interpretive to critical, it could be shifted from positivist to critical. This would be a far more significant change with, no doubt, more significant changes in research design, methods and outcomes. But much could be learned from the exercise of examining the ways in which the claims emanating from the positivist research would be challenged and

changed, where the data and the subsequent understanding to be viewed through the lens of a critical epistemology that was also cognizant of the relevant gender literature.

4. IMPLICATIONS FOR THE GENDER AND IS RESEARCH AGENDA

Applying the critical agenda to gender and IS research has implications for theory, epistemology and methodology. In their discussion of the IS field, Kvasny *et al.* (2005) distinguish the predominant 'gender-as-variable' research from gender and IT research that has a feminist/critical orientation, emphasizing that the latter has both methodological and epistemological implications. These implications revolve around four core themes: that feminist research is situated in the margins; that current gender and IS research is not adequately problematized; that feminist research questions the legitimacy and appropriateness of positivist research; and that reflection on the personal characteristics of the researcher (such as marital status, race, gender, sexual orientation, age and socio-economic class) can inform feminist research.

Turning to each of these implications, we begin with what has been described as the 'ghettoization of feminism' (Acker, 1989) whereby this type of research is often perceived as too polemical (a criticism which probably resonates well with many critical researchers). We would argue that rather than being relegated to the margins, that the gender dimension is important in practically all social sciences (Alvesson & Skoldberg, 2000). Even when gender is not the main focus of interest, researchers should aim to develop a level of sensitivity to gender aspects if we are to avoid negative stereotyping. Such gender ignorance can result in the reproduction of asymmetrical social relations and endorsement of the status quo. Thus, including gender thinking as a complement to other perspectives can provide rich insights into all kinds of topic areas.

The second point is that much of the current gender and IS research is not adequately problematized and remains under-theorized (Adam *et al.*, 2004). This situation will persist if papers continue to be published in key journals, which fail to acknowledge the gender inequities that exist and which fail to take account of the male dominance of technology. That is, if this research is done in the absence of a critical epistemology. As noted elsewhere: 'The cultural association between masculinity and technology is hard to exaggerate' (Wilson, 2003, p. 128) yet the established body of literature that theorizes this has made little inroad into the IS field, an area where technology is one of its key concerns.

Third, feminist (and critical) research queries the legitimacy of positivist research, which is typified by objectivity, neutrality and exactness. What we object to with positivism is not the use of quantification or statistical techniques, which are frequently associated with positivism, but their assumptions about the nature of reality and about the relationship between researcher and researched. The assumptions of much positivist research are based on reinforcing and sustaining the interests of powerful vested interests as opposed to being theoretically neutral. The predominance of the positivist perspective operates in an ideological role as it provides 'scientific' studies to support 'progress' yet at the same time it conveniently obscures differences such as unequal access to resources or the unequal distribution of income, elements

which can help provide understanding and critical questioning. In contrast, gender and IS research from a critical perspective does not proffer a 'value-free' truth that is both acontextual and ahistorical, independent of conflict.

Finally, reflections on the personal characteristics of the researcher such as race, gender, sexual orientation, age and socio-economic class can inform research. This can also encourage consideration of other non-institutionalized dimensions other than gender (beyond just adding more variables), hopefully leading us towards adopting a broad approach to understanding the social context of our research.

5. CONCLUSION

While the empirical data used in this paper is about gender and IT research, the lessons learned apply more generally. Thus, we end this paper by applying the implications of critical epistemology beyond the illustrative case of gender and IT research to the field in general. To present IS research from a critical perspective has several important characteristics. This perspective emphasizes the totality of relations (social, economic, political and ideological) and as a consequence it engenders interest in macro-level phenomena that are largely neglected in mainstream IS research. This also promotes the consideration and integration of different levels of analysis, which go beyond the organizational boundary {see, e.g. Klecun (2005) who considers telehealth in the UK in the context of national (policy), local and project levels; Richardson, (2005), who investigates call centre work and online shopping as cultures of consumption within a historic, political, economic and social context}.

A related point is that a critical perspective is not based on technical rationality that is divorced from wider social relationships. Instead, the ways in which IS are developed and used is said to constitute and be constituted by conflict between different interest groups, both within organizations and society more generally. A critical approach considers the role of different organized interest groups. This could include IT vendors, outsourcers, system developers or IT management, all of whom help shape the systems development process. These entities are not a neutral grouping, but seek to further their own social and economic self-interest through professional ideologies.

In addition, technology development and adoption could be conceptualized in terms of social control as we give consideration to conflicts between different groupings (Howcroft & Wilson, 2003). The technology itself is not neutral (Winner, 1985), but can also be seen in terms of potential social control. Issues such as the values associated with technology and masculinity arise because they are of benefit to the dominant groups in society at a particular time. The process of technology selection and adoption is serviced by a body of professionals who are themselves subject to bias and a prevailing ideology of technological determinism.

It is also worth noting that critical research is itself subject to critique. The issue of emancipation is seen as the lynchpin of critical research, yet the ways in which power relations are theorized, resisted and overthrown are seriously contested within the various intellectual

traditions. The emancipatory discourse has been described as merely another form of domination that is in itself totalizing (Wilson, 1997). As noted by Land (2004), one person's emancipation could be another person's enslavement. To adopt unitary and simplistic views of emancipation is necessarily limiting and will do little to further the critical project. Additional critique and reflection is needed to progress this area and further develop critical IS research.

In reflecting on the issues raised in this paper, we note that critical research poses a particular challenge for IS researchers. The adoption of a radically different research stance by IS academics might not be easily accepted by managers who are the primary 'consumer' of business school 'products'. However, the range of critical perspectives and ideas that stand in contrast to the predominantly managerialist and 'technicist' frameworks of understanding, offers compelling insight into issues concerned with IS development and use. This can provide explanatory power and offer better understanding of practitioner experiences in the field. For IS researchers, a critical agenda offers rich new insights, which are certainly worthy of consideration. In a world of increasing globalization, it is no longer helpful (if it is even possible) to separate the organization from its wider social and structural relationships. We suggest that a critical perspective can offer a way of understanding IS in this complex, dynamic context.

The aim of this paper has not been the provision of easy answers, recipes or formulas for the conduct of critical IS research. We hope to have provided some pointers, which may be of value, but we are generally suspicious of attempts to specify exactly how critical research should be carried out. It is certainly not our intention to be seen to be telling others how critical research should be carried out in practice, because we reject the view that there is only 'one true way' of doing critical research. We would also like to point out that what we have suggested here will hopefully change in the future as our experience of life and research develops and helps change us and our views of the world.

REFERENCES

Acker, J. (1989) Making gender visible. In: *Feminism and Sociological Theory*, Wallace, R.A. (ed.), pp. 68–81. Sage Publications, CA.

Adam, A. (2002) Exploring the gender question in critical information systems. *Journal of Information Technology*, **17**, 59–67.

Adam, A., Howcroft, D. & Richardson, H. (2004) A decade of neglect: reflecting on gender and IS. *New Technology, Work and Employment*, **19**, 222–240.

Ahuja, M. (2002) Women in the information technology profession: a literature review, synthesis and research agenda. *European Journal of Information Systems*, **11**, 20–34.

Alvesson, M. & Billing, Y.D. (1997) *Understanding Gender and Organizations*. Sage Publications, London.

Alvesson, M. & Deetz, S. (2000) *Doing Critical Management Research*. Sage, London.

Alvesson, M. & Skoldberg, K. (2000) *Reflexive Methodology*. Sage, London.

Cecez-Kecmanovic, D. (2005) Basic assumptions of the critical research perspectives in information systems. In: *Handbook of Critical Information Systems Research: Theory and Application*, Howcroft, D. & Trauth, E.M. (eds.), pp. 19–46. Edward Elgar, Cheltenham, UK.

Chua, W.F. (1986) Radical developments in accounting thought. *The Accounting Review*, **61**, 601–632.

Doolin, B. (1998) Information technology as disciplinary technology: being critical in interpretive research on information systems. *Journal of Information Technology*, **13**, 301–311.

Eagleton, T. (1996). *The Illusions of Postmodernism*. Blackwell, Oxford.

Fournier, V. & Grey, C. (2000) At the critical moment: conditions and prospects for critical management studies. *Human Relations*, **53**, 7–32.

Gefen, D. & Straub, D.W. (1997) Gender differences in the perception and use of email: an extension to the technology acceptance model. *MIS Quarterly*, **21**, 389–400.

Gorriz, C.M. & Medusa, C. (2000) Engaging girls with computers through software games. *Communications of the ACM*, **43**, 42–99.

Grey, C. (2005) Critical management studies: towards a more mature politics. In: *Handbook of Critical Information Systems Research: theory and Application*, Howcroft, D. & Trauth, E.M. (eds.), pp. 174–194. Edward Elgar, Cheltenham, UK.

Hirschheim, R. & Klein, H.K. (1994) Realizing emancipatory principles in information systems development: the case for ethics. *MIS Quarterly*, **18**, 83–109.

Howcroft, D. & Trauth, E.M. (2004) The choice of critical IS research. In: *Relevant Theory and Informed Practice: Looking Forward from a 20 Year Perspective on IS Research*, Kaplan, B., Truex, D., Wastell, D., Wood-Harper, A.T. & DeGross, J.I. (eds.), pp. 195–211. Kluwer Academic Publishers, Boston, MA.

Howcroft, D. & Wilson, M. (2003) Paradoxes of participatory design: the end-user perspective. *Information and Organization*, **13**, 1–24.

Igbaria, M. & Baroudi, J.J. (1995) The impact of job performance evaluations on career development prospects: an examination of gender differences in the IS workplace. *MIS Quarterly*, **19**, 107–123.

Igbaria, M. & Chidambaram, M. (1997) The impact of gender on career success of information systems professionals. *IT and People*, **10**, 63–86.

Klecun, E. (2005) Competing rationalities: a critical study of telehealth in the UK. In: *Handbook of Critical Information Systems Research: Theory and Application*, Howcroft, D. & Trauth, E.M. (eds.), pp. 388–416. Edward Elgar, Cheltenham, UK.

Knorr-Cetina, K.D. & Cicourel, A.V. (1981) *Advances in Social Theory and Methodology: Towards an Integration of Micro- and Macro- Sociologies*. Routledge & Kegan Paul, London.

Kvasny, L., Greenhill, A. & Trauth, E.M. (2005) Giving voice to feminist projects in management information systems research. *International Journal of Technology and Human Interaction*, **1**, 1–18.

Land, F. (2004) *Relevant Theory and Informed Practice: Looking Forward from a 20 Year Perspective on IS Research*. Concluding remarks. Kluwer Academic Publishers, Manchester, UK.

Latour, B. (1987) *Science in Action*. Harvard University Press, Cambridge, MA.

Latour, B. & Woolgar, S. (1979) *Laboratory Life: The Construction of Scientific Facts*. Princeton University Press, Princeton, NJ.

Lennon, K. & Whitford, M. (1994) Introduction. In: *Knowing the Difference: Feminist Perspectives in Epistemology*, Lennon, K. & Whitford, M. (eds.), pp. 1–14. Routledge, London.

McGrath, K. (2005) Doing critical research in information systems: a case of theory and practice not informing each other. *Information Systems Journal*, **15**, 85–101.

Mingers, J. (2000) What is it to be critical? Teaching a critical approach to management undergraduates. *Management Learning*, **31**, 219–237.

Morgan, A.J., Quesenberry, A.J. & Trauth, E.M. (2004) Exploring the importance of social networks in the IT workforce: experiences with the 'boy's club'. In: *Proceedings of the Americas Conference on Information Systems*, Luftman, J. (ed.), pp. 1313–1320. New York, USA.

Oakley, A. (2000) *Experiments in Knowing; Gender and Method in the Social Sciences*. Polity Press, Cambridge, UK.

Orlikowski, W.J. & Baroudi, J.J. (1991) Studying IT in organizations: research approaches and assumptions. *Information Systems Research*, **2**, 1–28.

Parker, M. (1995) Critique in the name of what? Postmodernism and critical approaches to organization. *Organization Studies*, **16**, 553–564.

Perron, D. (2004) *Globalization and Social Change*. Routledge, London.

Pinch, T.F. & Bijker, W.E. (1984) The social construction of facts and artifacts: or how the sociology of science and technology might benefit each other. *Social Studies of Science*, **14**, 399–441.

Quesenberry, J.L. & Trauth, E.M. (2005) The role of ubiquitous computing in maintaining work–life balance: perspectives from women in the IT workforce. In: *Designing Ubiquitous Information Environments: Socio-Technical Issues and Challenges*, Sorensen, C., Youngjin, Y., Lyytinen, K. & DeGross, J.I. (eds.), pp. 43–55. Springer, New York.

Quesenberry, J.L., Trauth, E.M. & Morgan, A.J. (2006) Understanding the 'mommy tracks': a framework for analyzing work–family balance in the IT workforce. *Information Resources Management Journal*, **2**, 37–53.

Richardson, H. (2005) Consuming passions in the 'global knowledge economy'. In: *Handbook of Critical Information Systems Research: Theory and Application*, Howcroft, D. & Trauth, E.M. (eds.), pp. 272–298. Edward Elgar, Cheltenham, UK.

Stanley, L. & Wise, S. (1993) *Breaking Out Again: Feminist Ontology and Epistemology*. Routledge, London.

Trauth, E. (2002) Odd girl out: an individual differences perspective on women in the IT profession. *Information Technology and People*, **15**, 98–118.

Trauth, E.M. & Quesenberry, J.L. (2005). Individual inequality: women's responses in the IT profession. In: *Proceedings of the Women, Work and IT Forum*, June 23–24, Brisbane, Queensland, Australia.

Trauth, E.M., Nielsen, S. & von Hellens, L. (2003) Explaining the IT gender gap: Australian stories for the new millenium. *Journal of Research and Practice in Information Technology*, **35**, 7–20.

Trauth, E.M., Quesenberry, J.L. & Morgan, A.J. (2004). Understanding the under representation of women in IT: toward a theory of individual differences. In: *Proceedings of the ACM SIGMIS Computer Personnel Research Conference*, Tanniru, M. & Weisband, S. (eds.), pp. 114–119, Tucson, AZ. ACM Press, New York.

Trauth, E.M., Quesenberry, J.L. & Yeo, B. (2005) The influence of environmental context on women in the IT workforce. In: *Proceedings of the ACM SIGMIS Computer Personnel Research Conference*, Gallivan, M., Moore, J.E. & Yager, S. (eds.), pp. 24–31, Atlanta, GA. ACM Press, New York.

Truman, G.E. & Baroudi, J.J. (1994) Gender differences in the information systems managerial ranks: an assessment of potential discriminatory practices. *MIS Quarterly*, **18**, 129–141.

Venkatesh, V. & Morris, M. (2000) Why don't men ever stop to ask for directions? Gender, social influence, and their role in technology acceptance and usage behavior. *MIS Quarterly*, **24**, 115–139.

Wajcman, J. (1991) *Feminism Confronts Technology*. Polity Press, Cambridge, UK.

Walsham, G. (2005) Critical engagement: why, what and how? In: *Handbook of Critical Information Systems Research: Theory and Application*, Howcroft, D. & Trauth, E.M. (eds.), pp. 225–243. Edward Elgar, Cheltenham, UK.

Webster, J. (1996) Revolution in the office? Implications for women's paid work. In: *Information and Communication Technologies*, Dutton, W.H. (ed.), pp. 143–157. Oxford University Press, Oxford, UK.

Wilson, F. (1997) The truth is out there: the search for emancipatory principles in information systems design. *Information Technology and People*, **10**, 187–204.

Wilson, F. (2003) Can compute, won't compute: women's participation in the culture of computing. *New Technology, Work and Employment*, **18**, 127–142.

Wilson, M. (2004) A conceptual framework for studying gender in information systems research. *Journal of Information Technology*, **19**, 81–92.

Winner, L. (1985) Do artifacts have politics? In: *The Social Shaping of Technology*, MacKenzie, D. & Wajcman, J. (eds.), pp. 26–38. Open University Press, Buckingham, UK.

Biographies

Debra Howcroft is a Professor of Technology and Organisations at Manchester Business School, the University of Manchester. Her research interests are concerned with the adoption and use of ICTs in a global context, with particular reference to gender, service work and globalization. She is an Associate Editor of the *Information Systems Journal* and a member of the editorial boards of *IT and People*, *Journal of Information Technology*, *Journal of Strategic Information Systems* and *Qualitative Review of Accounting and Management*. She has recently published the *Handbook of Critical Information Systems Research: Theory and Application* (Edward Elgar Publishing, Cheltenham, UK).

Eileen M. Trauth is Professor of Information Sciences and Technology and Director of the Center for the Information Society at The Pennsylvania State University. Her research is concerned with societal, cultural and organizational influences on information technology and the information technology professions with a special focus on the

role of diversity within the field. As a Fulbright Scholar in Ireland, Dr Trauth undertook a multi-year investigation of socio-cultural influences on the emergence of Ireland's information economy. She has continued that research by investigating cultural, economic, infrastructure and public policy influences on the development of information technology occupational clusters in the US. Dr Trauth has also investigated the under representation of women in the information technology professions in Australia, New Zealand, Ireland and the United States with grants from the National Science Foundation and Science Foundation Ireland. In 2008 she held a Fulbright Distinguished Chair in Gender Studies in Austria. She has also published papers and books on qualitative research methods, global informatics, information policy, information management and information systems skills.