

# Trouble in Computing: Taking “Positions” in the Discipline of Computing

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*“The Connection between masculinity and technology, reflected in women’s under-representation in engineering, and indeed in all scientific and technical institutions, remains strong as we enter a new era of technological change.”*

Judy Wajcman, TechnoFeminism, 2004

## ABSTRACT

*This paper explores the ‘identities’, and ‘self positioning’ of female academics working in a technical discipline. Narrative enquiry and discourse analysis are used to offer a deeper understanding of our gendered identities in relation to the dominant discourses of the computing discipline. The paper uses examples to demonstrate how the women in the study ‘position’ themselves, or come to be ‘positioned’ within the complex and contradictory discourses in the discipline. The women in the study work in the discipline of Computing where the dominant discourses around technical skills, and technical ability, along with positivist research methods are held in high esteem. In this paper I raise issues regarding the ‘feminist’ discourse as raised by women in the study. Some claim to work in a gender-neutral territory, and resist the feminist discourse. Others position themselves as ‘feminists’. Those who claim to be ‘non-feminist’ have found a way to blend into the dominant technical discourse. As such they do not threaten to the status quo of their organisational setting. Conversely, those who hold the position of ‘feminist’ have found themselves subject to bullying, and sexist behaviour, which has led them to being constructed as the ‘other’ or as ‘outsiders’.*

## INTRODUCTION AND BACKGROUND

This paper is a sub-set of work which, looks at the experiences of female academics working in the disciplines of ‘computing’ in the UK. The literature is drawn from current work about women in the academy, which is situated both in the field of ‘gendered organisations’, (Martin and Collinson, 2002) and the social studies of science and technology (SST). Some of the most interesting work from feminists looks closely at the relationship between technology and gender (Wajcman, 2000). Several writers such as Cockburn (1983, 1985), Cockburn and Omerod (1993), Kanter (1977), Bagilhole (2002), Henwood (1996, 1998), and Wajcman (1991, 1995, 2000, 2004), have demonstrated these fields are not mutually exclusive, and that when the issues are discussed in both contexts broader analysis can take place.

Gender segregation is prevalent in the British academy where it has been argued that academic work ‘is an occupation geared to and kept almost exclusively for men’ (Bagilhole, 2002 pg 5). A dominant discourse of masculine values and ideals in which women are more often constructed as the ‘other’ or as ‘outsiders’ prevails. Most often the academic career path is structured according to male perceptions of what it means to be a ‘successful academic’ (Knights and Richards 2003). These ‘masculine’ values are reflected in academic outputs and in the technical rational way knowledge is debated (ibid). In the 1996 RAE<sup>b</sup> exercise men were almost twice as likely as women to be entered (AUT, 2004). Women’s representation in the disciplines associated with technology and computer science is lower than other disciplines in British universities<sup>c</sup>. In subject specialisms where technology is a major feature, women’s contribution to the RAE is significantly lower than women’s representation in academia as a whole. Occupational segregation is both vertical and horizontal in computing (Bagilhole, 2002).

The under representation of women working in the academic disciplines of computing in the academy, is reflected further in wider British society where males dominate the design and use of technologies (DFEE 2001, Hellawell, 2001, Wilkinson, 2001). At school fewer girls are taking up computing at an advanced

level, and British universities are finding that women continue to show a lack of interest in computing degrees. British industry continues to experience a major skills shortages of computer technicians and ICT professionals, (DFEE, 2001, EOC 2004) at the same time women shun careers in these fields (EOC, 2004).

## GENDER SEGREGATION

Gender segregation is often explained using frameworks based on equality issues or human capital theory (Probert 2003). These frameworks are underpinned by issues concerning male power, assumptions about the division of labour in the labour market, and the relationship between paid and unpaid work in the home (Bagilhole 2002). Research within these frameworks has tended to focus on the structural and cultural influences that lead to continued employment segregation. The SST literature and much of the IS literature in gender and technology has examined the social construction of technology as a masculine domain (see Cockburn 1983, Wajcman 1991). Recently there has been a move in this research to reject an essentialist understanding of women, to focus on the experiences of the individual, recognising that ‘women’ are a diverse group (see Trauth 2002, Adam et al 2001, Bagilhole 2002 and Knights and Richards 2003). Theories of post modernism have focused on issues of identity, using the concepts of discourse and subjectivity, (see Henwood 1998, Hughes and Kerfoot 2002, Jorgensen 2002, Radden 2002 Whitehead 2002).

## THE POTENTIAL OF DISCOURSE

This paper uses discourse as a theoretical approach, issues of identity and subjectivity are central to the narratives and discussion. Meaning is taken to be dependent on a person’s subjectivity, and are situated within a historical discourse, which is constantly changing. The concept of discourse is taken from the work of Michel Foucault. Feminists have found the concepts useful in their analysis. Henwood (1998) sums up what we mean by ‘discourse’:

*“They are not merely people’s assumptions, ideas and definitions expressed through language but also the practices, formations and subject positions which follow from these”. (p.39).*

In these terms identity is not fixed within an individual, rather it is open to change dependent on experiences in the social world. Experiences at school, such as expectations of the way girls and boys, should behave as females or males in a heterosexual society, shape subjectivity. Subjectivity is therefore a site of dissension and conflict. The theory rejects the idea of women as a homogenous group, and places emphasis on ‘difference’. The idea of a common experience of oppression of all women as a group is rejected.

In these terms, there are then a number of discourses in society, some of which are more dominant than others. The theory argues that there are ‘struggles’ between discourses where the dominant discourse becomes established, and that this (dominant discourse) gives meaning to the social world in which it is applied. It is argued that the dominant discourse holds the ‘power’ and that analysis of the ‘dominant discourse’ and our reaction to it can tell us about the power relations within an occupational setting. Foucault (1981) suggests that there are those in any social setting who may have a vested interest in maintaining the dominant discourse that becomes to be constituted as the norm. This does not mean that others do not contest the discourse but that they are perhaps marginalised by what is considered to be the norm or dominant discourse in that field (be it law,

education or technology). Research into discourse focuses on the way a person perceives themselves in the social world and how they 'position' themselves or come to be 'positioned' whilst working within complex and often contradictory discourses in their organisational setting. This is particularly useful to us in gaining a greater understanding of women's experiences when they are working in non-traditional subject areas such as computing, where, as we will discuss the dominant discourses may be associated with masculine values.

### DISCOURSES AROUND TECHNOLOGY AND GENDER

Cockburn (1983a, 1983b, 1985) and Wajcman's (1991, 1995,) seminal work are acknowledged as the foundations of feminist technology studies (Faulkner, 2000). Cockburn's early work (1983, 1985) demonstrated how men positioned themselves in key technological roles, to the detriment of some women. Wajcman showed us how historically certain technical artefacts became symbolic of men's leisure pursuits and hence (the computer) came to be ascribed with the male identity (Wajcman, 1991). Such work has discussed technology's association with masculinity and power, which as Cockburn (1985) argued reproduced gender relations, which she described as 'hard' and 'soft' in the workplace. Much of the work in this area has focused on women's alienation and exclusion from this 'hard' culture using a structural framework. If we apply this to the academy, the pure sciences and technical disciplines can be identified as 'hard', whereas the social sciences or humanities disciplines are described as 'soft' in character. As Knights and Richards (2003) point out when terms such as 'hard' and 'soft' are used in binary oppositions, as in the case with technology, they are rarely innocent or neutral constructions. What they do is reinforce the current power and knowledge relations, thus they have the ability to sustain or transform particular identities and interests (ibid, p. 222). Both the fields of organisational gender and SST describe computing as a 'hard' discipline. The 'hard' and 'soft' distinction tends to pre-determine what is recognised as competence within the discipline, and what is considered to be of value or importance in teaching, student support, and research in the discipline.

Feminist writers have successfully applied theories of discourse to studies of gender and technology in the academy to determine why, and how women and men actively maintain or reject the dominant discourses (Clegg et al 1999, Jorgensen, 2002, Henwood, 1998). It has been argued for some time that a 'masculine discourse' surrounds the design and use of technologies in many western societies. That males from an early age consider that 'computers, like cars and others forms of hardware, constitute a naturalised part of (their) male heterosexual identity' (Clegg 2001, p.314). The male domination of computing and thus the masculine values assigned to the discourses around computing and technology, extend to the work place, where gendered relations exist in our relationship to technology just as much as they might do in the home and in education (Wajcman, 1991).

### THE STUDY AND METHOD

I present here a sub-set (this is still a work in progress) of the findings of the narratives of ten women. Each of the women were interviewed for between two and four hours. The interviews were often followed up in further discussions for clarification. The women work in different educational institutions in the UK. They all work in Computing Departments in either colleges or universities. The ages of the women in this paper range from 45 – 56. Several of the women have worked in the Computing Industry, before working in the field of education. They hold positions as lecturers, senior lecturers or professor. Each of them has worked in education for a minimum of ten years.

I have taken a narrative approach allowing the women to develop their stories themselves, rather than trying to elicit direct explanations using question and answer methods (Hollway et al 2000). Using the concepts of 'discursive positioning' (Davies & Harre, 1990, 1999) I am particularly interested in how these women's self-positioning affirm or challenge the dominant discourses in computing.

### FINDINGS AND DISCUSSION

The women in this study are understood as negotiating their way through complex interconnecting discourses concerning their relationship with their gender identity, sexuality and their work as academics in a technical discipline. Several themes or positions in relation to the women's identities emerged in the study. The themes resided around technical work, research paradigms, the conflict between

work and family and their mothering work; both at work and at home. Whilst some represented themselves as 'different', or 'unique' because they worked in a predominately male field, others rejected issues of gender difference in their workplace. In this paper I discuss the feminist discourse and the position of 'feminist' or 'non-feminist'.

The word 'feminism' can have different connotations to it. The meaning of the term is dependant on the context and the given moment in which it is applied (Beasley, 1999). In popular culture most of us are aware of the term 'feminism', but we add our own subjectivities to make meaning of it. For myself feminism is about politics and about challenging the inequalities many women face in areas of their lives. In popular culture the term 'feminism' may have different meanings and connotations associated with it than my own interpretation.

### TAKING A NON-FEMINIST POSITION

Paula and Margaret both stated that they enjoyed their work immensely. After several years teaching, both are still enthusiastic about their subject. They both enjoy teaching the technical subjects of the discipline. They work at different educational institutions where their colleagues are predominantly male.

Paula is in her late fifties; she began work in the computing industry in the early 60's. She is a senior lecturer who has worked in the computing discipline in a university for over twenty years. She has never considered, or concerned herself about working in a 'male dominated environment'; she resists any suggestion that her gender makes any difference to her workplace experiences.

*"I have never, ever seen people (in work) as male or female" (Paula)*

She holds strong views about feminism.

*"I'm not a feminist. I've always thought that people would take me on my own abilities..... I hate the droning on of people who are victims. And I will never be a victim." (Paula)*

She resists the feminist discourse. To be a feminist in her view is to be a 'victim'. She talks about being taken on her 'own abilities'; suggesting she should be employed on her own merit, regardless of her gender. When talking about her own career in computing in the university, she discusses how when her children were ill she didn't tell her head of department of any difficulties she was experiencing. Instead, she struggled to complete her work and find care for her children.

*"They'd taken me on and they knew I had two young children, and I didn't want to let down the women's cause in a way". (Paula)*

Although Paula clearly positions herself as a 'non-feminist', I suggest her comments about 'the women's cause' contradict her self-positioning. She as an individual does not align these comments with feminism or position herself as a feminist.

Margaret is in her early fifties, she too started her career in the computing industry. She had been head of the computing department in her institution for a number of years before taking a more senior management role. She denies there are any issues regarding gender or sexism in her workplace. She does not position herself as a 'feminist'.

*"I think it (a person's behaviour) has a lot to do with that person's character, rather than the fact that she is a woman or a man". (Margaret)*

However, when talking about her career in terms of progression she stated *"there was no doubt that women had to work harder to get where they were going than the men in the (computing) industry"* and as an academic.

*"I have always had to prove myself as women" (Margaret).*

Here again there are some contradictions but she remains firm about her 'non-feminist' position.

Paula and Margaret resist any association with feminism, and publicly reject the feminist discourse. My analysis of their narratives and actions contradict these public statements. Both of them deny any difference from their male colleagues associated with gender and claim to work in gender-neutral territory. They reject any notions of themselves as a marginalised group.

Both women have a long history of working in computing, I suggest they have adapted and assimilated their workplace identities over time. I suggest they enjoy the high status given to the technical skills they possess, and identify with the dominant technical discourse. Taking the position of 'non-feminist', has allowed them to blend into their discipline. Allowing them to comfortably position themselves alongside the dominant masculine discourse in relation to their professional identities and their work.

### TAKING A FEMINIST POSITION

Hannah, and Amanda both position themselves as 'feminists'. Both work in universities in computing departments, both of them have research interests related to SST.

Hannah is in her late forties and is a senior lecture in computing. She began teaching in the discipline of computing after completing an MSc in Computing in the early 90's. Before this she had taught subjects in Literature. In her department there are thirty academics, of which five are female.

She discussed how the attitude in her department was openly hostile to women.

*"I think it's, erm, there's an underlying current of misogyny, discrimination and sexism in my view. A male professor said that erm that women don't make reliable workers in the department, because they go off and have children.....he was talking about women lecturers". (Hannah).*

Hannah had publicly challenged this statement in a department meeting, the male academic in question had not spoken to her since, and she felt her relationship with the majority of the male staff in the department had become somewhat tenuous.

A male member of staff had told her that other male members of staff had given the females in the department the nickname, 'the hens'. This was applied to herself and the other women in the department in a derogatory way.

*"If we had lunch together it was, what are you lot (the hens) up to, what are you conspiring at, and things. Actually most of the time we were discussing our children, where we could buy a good bargain, nothing related to work". (Hannah)*

Amanda in her early fifties started her work in computing in the early 60's, she has worked in academia for twenty years and is a professor in her computing department. As some of her research resides in the feminist literature, her colleagues know of her feminist position. During the narrative she gave many examples of what she described as 'confrontations' about her research and her beliefs in the department. At the time of the interview she said that over the previous year there had been many times that she had thought 'to throw the towel in' or 'just give up' and work elsewhere. She discussed how she was concerned about the consequences for other women in department who might be associated with her and be labelled alongside her as one of the 'feminists' in the department.

*"In some cases I can see that people who are my friends, are not given a job by somebody else, maybe in authority to the research director, because they're part of this Amanda (me), soft research, feminist, colleagues, friends stuff". (Amanda)*

Amanda went on to explain that this not only included the females in the department but also some of the males she closely associated with, which she described as 'pro-feminist'. She explained that the technical 'hard' research, and the teaching of technical subjects, was highly valued in her department.

*"There's definitely a lot of old fashioned, 'blokishness', which is critical.*

*It's very hard to put your finger on it..... The technical stuff is in the hands of the men, and that's the real stuff, and so on.....they are protecting some kind of, they're very protective of their own status as researchers (sic)". (Amanda)*

Hannah and Amanda reject ideas of gender neutrality and challenge issues of inequality between men and women working in their departments as they arise. Both position themselves as 'feminist'. Although technically competent they have both chosen to teach and research in areas labelled by colleagues as 'soft'. Consequently, as Amanda's statements demonstrate their type of work and research may be challenged and undervalued in a department where the technical discourse is highly valued and protected.

Hannah and Amanda by their actions and nature of their teaching and research position themselves as 'feminists'. I suggest this does not allow them to blend into their workplace setting. Instead their position places them in opposition to the dominant discourse, where some of their colleagues may view them as a threat to the status quo.

### CONCLUSION

In this paper it is not my intention to make any collective claims about the experiences of women working in Computing. This paper is about highlighting the complexities of our work place identities as we as individuals construct them.

In this study those women who held a position of 'non-feminist', withdrew from any discussion around issues relating to gender, and refused to acknowledge any 'difference' between men and women's attitudes to technology or technical ability. Those who positioned themselves as 'feminist', questioned the dominant technical discourse and the values attributed to positivist research methods. They are not afraid to challenge sexist behaviour or inequalities they experience in their departments.

Those who hold the position of 'non-feminist', holding a belief of gender equality or neutrality in their workplace appear to have a more satisfying work experience. I suggest that their self identities do not challenge the status quo. In contrast those positioned as 'feminists' found themselves at odds with the norms and values of the discipline leaving them open to harassment and sexism.

Issues of how we come to construct our 'self position' and 'identity' add more complexity to gender relations in the discipline. In the findings of this research there are several contradictions in the statements. As Paula's narrative demonstrates, we may interpret the word feminism from a number of perspectives, and add our own connotations to it. I suggest that for these women and their colleagues the terms 'feminist' or 'non-feminist' do not have innocent or neutral meanings attached to them.

If we wish to tackle women's under representation, or seek to understand how some women become 'marginalised', or situated as the 'other' in the discipline of computing then I suggest that in future work we need to tease out, how our self positioning and 'self identities' as women and men work to resist, or reinforce the dominant discourses of the discipline.

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## ENDNOTES

### <sup>a</sup> Terms and Definitions

'**Computing Discipline**' encompasses department of computing and information technology (IT), information systems (IS) and information communication technologies (ICT's).

<sup>b</sup> **RAE** is the Research Assessment Exercise where performance of research is judged on the basis of 'excellence' rather than equity. Public funds are allocated related to an institution/department's performance.

<sup>c</sup> **The under representation of women in computing**. In Computer software engineering there are 610 female lecturers and a total of 2010 male lecturers. In IT & Systems sciences there are 440 female lecturers and a total of 1045 male lecturers. In computing and software engineering less than 10% professors are female and in IT & systems sciences around 17% are women. (The Times Higher 2004).

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