

Masculinity, dualisms and high technology

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This paper explores the working out in daily life of certain classic dualisms of western thought. It focuses on reason/non-reason and transcendence/immanence and on their influence in structuring social relations in and around high-technology sectors in Cambridge, England. The significance of the masculine poles of these dualisms for the characteristics of these sectors and for male scientists' relationship to them is explored, as are some of the associated tensions in the relationship between the spheres of 'home' and 'paid work'. A particular high-tech masculinity is being reinforced, resistance to which seems to lead primarily to a reinforcement of the dualisms. The conclusions consider some of the implications of these findings both for these sectors and for life in academe.

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One important element in recent feminist analyses of gender has been the investigation and deconstruction of dualistic thinking. This paper takes up one aspect of this issue of dualisms and the construction of gender. It examines the interplay between two particular dualisms in the context of daily life in and around high-technology industry in the Cambridge area of England. The focus on dualisms as *lived*, as an element of daily practice, is important (see Bourdieu 1977; Moore 1986), for philosophical frameworks do not exist 'only' as theoretical propositions or in the form of the written word. They are both reproduced and, at least potentially, struggled with and rebelled against in the practice of everyday living. The focus here is on how particular dualisms may both support and problematize certain forms of social organization around British high-technology industry.

High-technology industry in various guises is seen across the political spectrum as the hope for the future of national, regional and local economies (Hall 1985) and it is important, therefore, to be aware of the societal relations, including those around gender, which it supports and encourages in its current form of organization.¹ In the United Kingdom, 'high tech' has been sought after by local areas across the

country and has been the centrepiece of some of the most spectacular local-economic success stories of recent years. In particular, it is the foundation of what has become known as the 'Cambridge phenomenon' (Segal Quince and Partners 1985). The investigation reported on here is of those highly qualified scientists and engineers, working in the private sector in a range of companies from the tiny to the multinational, who form the core of this new growth. These are people primarily involved in research and in the design of new products. This is the high-status end of high tech. The argument in this paper takes off from two important facts about the scientists who work within this part of the economy: first, that the overwhelming majority of them are male; and, secondly, that they work extremely long hours on a basis which demands from them very high degrees of both temporal and spatial flexibility (see Henry and Massey 1995). It was the conjunction of these two things which led to the train of inquiry reported here.

High technology and long hours of work

There are three bundles of reasons for the long hours worked by employees in these parts of the

economy.² The first group of reasons arises from the nature of competition between companies in high-technology activities. This is the kind of competition which has been characterized as classically 'post-Fordist'. Production frequently takes place on a one-off basis, as the result of specifically negotiated and competitive tenders. High among the criteria on which tenders are judged is the time within which the contract will be completed. Moreover, both during and after production there is a strong emphasis on responsiveness to the customer: in answering inquiries, in solving problems which emerge during and after installation/delivery of a product, in being there when needed – even if the telephone call comes through from California in the middle of the night. It is not so much the inherent unpredictability of R & D as the way in which it is compressed into the spatio-temporal dimensions required by this particular social construction of competition which is the issue. 'Time' is important to successful competition. The results should give pause for thought, for these are high-status core workers in what is frequently heralded as a promising flexible future. The demands which this flexibility places even on these workers are considerable.³

Moreover, these pressures for long hours are added to by a second bundle of reasons: those which revolve around the nature of competition within the labour market. There are a number of strands to this but the most significant derives from the general character of this market as a knowledge-based labour market. It is a market in individualized labour power, valued for its specific learning, experience and knowledge. In order to compete in this labour market (and others like it) employees must, beyond the necessity of working the already long hours required by their companies, continue to reproduce and enhance the value of their own labour power. They must keep up with the literature, go to conferences and maintain the performance of networking and of talking to the right people. This is additional labour, put in outside the hours required by the company and necessary for its success but equally necessary for the success of the individual employee. Within the workplace, interaction between employees can produce a culture which glorifies long hours of work. Again, this may derive from competition between individuals but it may also result from various peer-group pressures – the need 'not to let the team down', for instance, can become a form of social compulsion (Halford and Savage 1995).

We don't *need* to work longer – I think people choose to because they enjoy their work, because they own the project ... and there's also ownership of the client.

The clock doesn't matter at all. The only restriction for me is I don't like to get home too late. The landlady's given me a key but I don't like to arrive much after midnight.

I've got so much holiday I don't know what to do with it.

... because I enjoy it ... I enjoy the work ... I enjoy computers ... I often wonder what I would have done if I'd had to get a job in the days before computing.

One person was sent abroad to a conference because they would not take time off.

But the thing we have discovered over the years is that people who work here, and get into it, become addicted ... we find the problem of getting some people to leave; they do get very engrossed in the thing ... This circuit of people working on the system here, the difficulties are extracting them for some other thing that may be necessary, like they haven't had any sleep for the last 40 years!

Figure 1. Enthusiasm for work leading to longer hours

But the third cluster of reasons for the long hours of work in high-tech sectors is completely different. It is, quite simply, that the scientists love their work. Figure 1 illustrates some aspects of this; the first four quotations are from scientists themselves, the last two from company representatives. These scientists and engineers become absorbed by their work, caught up by the interest of it; they don't like to leave an element of a problem unsolved before they break off for the evening. The way in which this involvement is interpreted or presented by different groups varies. Company representatives speak of the kinds of people they seek to employ as committed and flexible, as 'motivated', as 'able to take pressure', as not being the kind to watch the clock, and they frequently acknowledge that such characteristics may derive from pure interest in the work itself. A number of company representatives were quite clear that their search for employees was

directed towards finding these characteristics. The scientists themselves often talk of their delight in the nature of the work, of its intrinsic interest. However, where these male scientists have partners (and all the partners we identified were women), their views were more cynical, often pointing up obsessiveness or workaholism.⁴

A couple of points are worth making at this juncture. First, an immediate response to the working lives of these employees may well be critical. Certainly, as we carried out the research, ours was so, in principle at least. Yet the reasons for the perhaps excessive duration of work also have their other side: each is thoroughly ambiguous, though each in a different way. In terms of sectoral competition, 'putting the customer first' is no bad thing (especially if you are the customer). Yet the demands placed on employees can be enormous. In terms of the labour market, it has usually been interpreted as an advance that one's value is based on knowledge and experience rather than, for example, on lack of unionization or an acceptance of low wages. Moreover, the individualization of the labour market must in some senses be an advance, certainly over the treatment of workers as a mass, as an undifferentiated pool of nameless labour power. The idea, however unlikely, that we are heading towards an economy and society which is based on knowledge is interpreted as a change for the better. Finally, the fact that people enjoy their work and that they enjoy it in part precisely because it is knowledge-producing (in the employees themselves) can be seen only as an improvement over the kinds of jobs which are characterized above all by mind-numbing monotony and a desire to get to the end of the day. After years of exposing the fact and the effects of de-skilling, I find it hard to criticize jobs because they are too absorbing and demand too much in the way of skill enhancement! (Yet this very dilemma may point to the fact that the problem has been wrongly posed. Maybe it is the polarization between de-skilled and super-skilled which should be the focus of our attention . . . ?)

Secondly, the second and third of these sets of reasons for long hours (the nature of the labour market and the love of the work), though perhaps less so the first (the nature of competition in the sector), are shared by many other occupations and parts of the economy, especially professional sectors and, perhaps most particularly, academe. Some of

the issues which arise are therefore of much more general relevance, beyond the relatively small sectors of high technology in Cambridge. Certainly, they posed questions to us personally as we did the research. Yet in other ways, the particular manner in which these pressures function and the kinds of social characteristics with which they are associated, are quite specific to individual parts of the economy.

Dualisms and masculinities

Dualistic formulations

One of the specificities of these high-technology sectors is bound up with the reasons why the employees are so attached to their jobs and how these reasons are interpreted. The dynamics in play here are associated with elements of masculinity and of a very specific form of masculinity. Above all, the attachment to these jobs is related to with their character as scientific, as being dependent upon (and, perhaps equally importantly, confined to) the exercise of rationality and of logic. Within the structure of the economy, these jobs represent an apex of the domination of reason and science. It is this which lends them much of their status and which, in part, accounts for the triumphalist descriptions they are so often accorded in journalistic accounts. What they demand is the ability to think logically.⁵ They are in a sector of the economy whose prime characteristics are, for these employees, structured around one of the oldest dualisms in western thought – that between reason and non-reason; it is a sector identified with that pole – reason – which has been socially constructed, and validated, as masculine (see, especially, Lloyd 1984).

Moreover, in this dualistic formulation, science is seen as being on the side of History (capital H) as progression. It makes breakthroughs; it is involved in change, in progress. And it is here that it links up to a second dualism: that between transcendence and immanence. In its aspect of transcendence, science is deeply opposed to that supposed opposite, the static realm of living-in-the-present, of simple reproduction, which has been termed 'immanence'. This opposition between transcendence and immanence is also a dualism with a long history in western thought. And again it is transcendence which has been identified and constructed as masculine (he who goes out

and makes history) as against a feminine who 'merely' lives and reproduces. As Lloyd (1984, 101) argues

'Transcendence', in its origins, is a transcendence of the feminine. In its Hegelian version, it is associated with a repudiation of what is supposedly signified by the female body, the 'holes' and 'slime' which threaten to engulf free subjecthood (see Sartre 1943, pp 613–4) . . . In both cases, of course, it is only from a male perspective that the feminine can be seen as what must be transcended. But the male perspective has left its marks on the very concepts of 'transcendence' and 'immanence'.

The two dualisms (reason/non-reason and transcendence/immanence) are thus not the same, though there are interrelations between them.

The reasons for these characterizations and for the construction of these dichotomies in the first place, as well as their relationship to gender, have been much investigated (see, for instance, Dinnerstein 1987; Easlea 1981; Keller 1982, 1985; Hartsock 1985; O'Brien 1981; Wajcman 1991). Many of these authors have examined the relation between the constitution of science on the one hand and of gender on the other. David Noble's (1992) history of *A world without women* tells the long story of the capturing by enclosed masculine societies of the kind of knowledge production which was to receive the highest social valuation.

Such dualist thinking has been subject to much criticism. However, the nature of the criticism has changed and been disputed. In *The second sex*, Simone de Beauvoir (1949) famously urged women to enter the sphere of transcendence. In recent years, however, it has rather been the fact of thinking dualistically which has been the primary focus of dispute. Dualistic thinking has been criticized both in general, as a mode of conceptualizing the world, and in particular, in its relation to gender and sexual politics. Dualistic thinking leads to the closing-off of options and to the structuring of the world in terms of either/or. In relation to gender and sexuality, it leads, likewise, to the construction of heterosexual opposites and to the reduction of genders and sexualities to two counterposed possibilities. Moreover, even when at first sight they may seem to have little to do with gender, a wide range of such dualisms are thoroughly imbued with gender connotations, one side being socially characterized as masculine, the other as feminine, with the former thereby being socially valorized. The

power of these connotational structures is immense and it is apparently not much lessened – indeed, it is possibly rendered only more flexible – by the existence among them of inconsistencies and contradictions.

Dualistic practices

It was only gradually, in the course of considering the interview material and the nature of work in the scientific sectors of the economy, that the issue of dualisms emerged as significant in this research. It was the things which people said, the way life was organized and conceptualized, the unspoken assumptions which emerged repeatedly, that pushed the inquiry in this direction.

Thus, for example, it was evident that in Cambridge these scientific employees were specifically attached to those aspects of their work which embody 'reason' and 'transcendence'. What they really enjoy is its logical and scientific nature: they may glory in the scientificity of their work and frequently exhibit delight in the puzzle-solving logical-game nature of it all.⁶ Their partners comment upon their obsession with their computers, and both partners and company representatives talk of boys with toys (one representative candidly pointing out that they like their jobs because the company can buy far more expensive toys than the men themselves could ever afford):

We have toys which they can't afford. You know engineers, big kids really; buy them a computer, you know you've got them . . . you know [they are] quite happy if you can give them the toys to play with.

The attachment to computers may be seen in this context as reflecting two rather different things, both of which are distinct from the more technologically orientated love of 'fiddling about with machines'. On the one hand, these machines, and what can be done with them, embody the science in which the employees are involved. They are aids and stimuli to logical thought. On the other hand, their relative predictability (and thus controllability) as machines insulates them from the uncertainties, and possibly the emotional demands, of the social sphere (see below).

The aspect of transcendence comes through in the characterizations of the job as 'struggling' with problems, as 'making breakthroughs'; whether these workers think of themselves as far from it or right up against it, there is the notion of a

scientific-technical 'frontier'. One scientist, reflecting on the reasons for his long hours of work, talked of being 'driven by success' and of the fact that he was 'always reaching higher'. A scientist in the same company, who was quite critical of the hours worked by others, argued that for some people crisis is part of the job culture: 'it's a sort of badge of courage'. Other words too reflect the effort and the struggle of it all: 'If I stagger out of here at 11 o'clock at night I really don't feel like going home and cooking'. There's the quest: 'As a parent I try to spend as much time as I can with [the child] but in my quest for whatever it is I tend to work very hard'. There's the compulsion: 'if you've gotta do it then you've gotta do it'. And, hopefully, there's the triumph:

his wife is much more even-tempered than my wife who says sort of 'what the hell, Friday night we have got to go out and don't you forget it', but [my wife] accepts the fact that if there is nothing on specifically and nothing to be done, that the chances are that I will disappear, and reappear looking cross-eyed and what not, with a slightly triumphant smile or look downcast.

That quotation illustrates a further phenomenon: that the self-conception of many of these employees is built around the work that they do and specifically around this work as scientific activity:

the machine in front of them is their home.
It is their science which dominates their lives and interests ...

Moreover, this glorification of their scientific/research and development capabilities on the part of the scientists can go along with a quite contrasting deprecation of their ability to do other things, especially (in the context of our interviews) their incompetence in the face of domestic labour. This is work which it is quite acceptable *not* to be good at. Thus:

laundry? 'I shove it in the machine'; *cleaning?* 'I do it when it gets too much'; *shopping?* 'Tesco's, Friday or Saturday'; *cooking?* 'I put something in the microwave. Nothing special. As long as it's quick and easy that's good enough for me'; *gardening then?* 'when necessary'.

There is here none of the pleasurable elaboration on the nature of the tasks which typifies descriptions of the paid scientific work. The answers are short and dismissive.

Such attitudes are important in indicating what is considered acceptable as part of this scientist's own

presentation of himself. Not only is the identification with scientific research very strong and positive but it seems equally important for him to establish what is *not* part of his picture of himself. Domestic labour and caring for his daily needs and living environment is definitely out. It is not just that scientific activity is positively rated which is significant but also that it is sharply cut off from other aspects of life. This is precisely the old dualism showing its head in personal self-identification and daily life. What was going on was a real rejection of the possibility of being good at *both* science *and* domestic labour. A framing of life in terms of 'either/or'.

In this case, and in some others, such down-playing of the rest of life extended to all non-work/scientific activities. But such extreme positions were not common and seem to be more evident among single men than those with partners and, even more markedly, than among those with children. Some men were clearly aware of the issue. For one scientist, a new baby had 'completely changed his life' (what this meant was that he went home early almost every other night) and yet the difficulty of balancing or integrating both sides of his life was evident:

I feel frustrated ... when ... after this baby that's changed my life ... I go home early every other day (almost) and pick her up at 4.35, take her home, play with her until bedtime, and ... I find that sometimes that's quite frustrating, and keeps me away from work. I mean - it's fulfilling in its own right, but it's ... I'm conscious of the fact that ... I call it a half-day, you know. I find it frustrating.

Finally, some of the comments made about the scientists by (some of) the partners were particularly sharp and revealing, describing them as

not very socially adequate ... better with things than with people.
work gets the best of him, work is the centre of his ... life.

One of the very few female company representatives (that is, a member of management, not of the scientific team) reflected:

Well, when I first joined the company there were twelve people here and they stuck me in an office with the development team and it was a nightmare. I really hated it. They didn't talk, they didn't know how to talk to a woman, they really didn't.

What appears to be going on, in and around these jobs, is the construction/reinforcement of a particular kind of masculinity (that is, of characteristics which are socially coded masculine) around reason and scientificity, abstract thought and transcendence. It is a process which relates to some of the dualisms of western thought and which, as we shall see below, has concrete effects on people's lives.

Such characteristics of the employees, it must be stressed, relate to the more general nature of these jobs. These are jobs which derive their prestige precisely from their abstract and theoretical nature. The very construction and content of these jobs are the result of a long process of separation of conception from execution (and of the further reinforcement of this distinction through social and spatial distancing). They are jobs, in other words, which enable and encourage the flourishing of these kinds of social characteristics. Moreover, the long hours which, for the various reasons discussed above, are worked in them enforce both their centrality within the employees' lives and a transfer of the bulk of the work of reproduction to others. In Cynthia Cockburn's (1981, 181) words:

Family commitments must come second. Such work is clearly predicated on not having responsibility for childcare, indeed on having no one to look after, and ideally someone to look after you.

The implication of all this is not only that these jobs are an embodiment in working life of science and transcendence but also that, in their very construction and the importance in life which they thereby come to attain, they enforce a separation of these things from other possible sides of life (the other sides of reason and transcendence) and thus embody these characteristics as part of a dualism. Moreover, by expelling the other poles of these dualisms into the peripheral margins of life and frequently on to other people (whether unpaid partner or paid services), they establish the dualisms as a social division of labour. The pressure is for someone else to carry the other side of life.

Moreover, if there is indeed a form of masculinity bound up with all this, then the companies in these parts of the economy let it have its head; they trade on it and benefit from it and – most significantly from the point of view of the argument in this paper – they thereby reinforce it. Furthermore, the possession of these characteristics, which are socially coded as masculine and which are related to

forms of codification which resonate with dichotomous distinctions between two genders, makes people more easily exploitable by the forms of capital in these sectors. There is here a convergence of desires/interests; between a certain sort of masculinity and a certain sort of capital.⁷

This is not to say that what is at issue here is simple 'sexism'. Our interviews – certainly as analysed so far – did not reveal the explicit sexism found in some other studies, including Cockburn's (1985). We did not encounter much in the way of strong statements about the unsuitability of women for these jobs. There were a few such statements but they were infrequent in the overall context of our interviews. Nor was it clear that the male scientists who displayed the characteristics described always recognized them explicitly as masculine (although further probing may well have unearthed more evidence on this score). The point, however, is that what is at issue here is not so much overt discrimination or sexism as deeply internalized dualisms which structure personal identities and daily lives, which have effects upon the lives of others through structuring the operation of social relations and social dynamics, and which derive their masculine/feminine coding from the deep socio-philosophical underpinnings of western society.

The work/home boundary

The boundary between work and 'home' has often been seen, and in this case can be seen, as an instantiation of the dualism between transcendence and immanence.⁸ At work, the frontiers of history are pushed forward; at home (or so the formulation would have us believe), there is a world of feelings, emotions and (simple) reproduction. Once again, Lloyd (1984, 50) summarizes the complex arguments which have evolved:

We owe to Descartes an influential and pervasive theory of mind, which provides support for a powerful version of the sexual division of mental labour. Women have been assigned responsibility for that realm of the sensuous which the Cartesian Man of Reason must transcend, if he is to have true knowledge of things. He must move on to the exercise of disciplined imagination, in most of scientific activity; and to the rigours of pure intellect, if he would grasp the ultimate foundations of science. Woman's task is to preserve the sphere of the intermingling of mind and body, to which the Man of Reason will repair for solace, warmth and relaxation. If he is to exercise the

most exalted form of Reason, he must leave soft emotions and sensuousness behind; woman will keep them intact for him.

The fact that all this can be, and has been, severely criticized in terms simply of its descriptive accuracy, most particularly from a feminist perspective, has not destroyed its power as a connotational system. What is at issue in the ideological power of these dualisms is not only the material facts to which they (often only very imperfectly) relate (many women don't like housework either and many female paid employees negotiate a work/home boundary) but the complex connotational systems to which they refer. Moreover, the negotiation of this boundary has emerged in our research as a crucial element in the construction of these men's attitude to their work and in their construction of themselves.

One of the avenues of inquiry which originally sparked my interest in designing this research derived from statements made in interviews in a previous project (Massey *et al.* 1992). That project was also concerned with investigating high-tech firms, specifically those located on science parks, and one of the recurring themes in a number of the interviews concerned the blurring of boundaries. 'The boundary between work and play disappears' was a response which stuck in my mind from that earlier research. What absorbed me at that point was the characterization of everything outside paid work as 'play' and, especially given the very long hours worked in the companies we were investigating, it prompted me to wonder who it was that performed the domestic labour which was necessary to keep these men fed and watered and able to turn up for work each morning.⁹ But what the earlier respondent had in mind was that work itself had many of the characteristics of play: that you get paid for doing things you enjoy, you have flexible working arrangements, you take work home, you are provided with expensive toys. In this formulation, there really is no boundary between paid work and play. In this way of understanding things, 'the home' in the sense of the domestic, of reproduction, of the sphere of emotions, sensuality and feelings, or of immanence, does not enter the picture at all. How, then, do we interpret what actually happens to the boundary between work and home in the case of these scientists in Cambridge? There are two stages to the argument.

First, there is indeed a dislocation of the boundary between work and home. This is particularly

true in a temporal and spatial sense. Moreover, it is a dislocation which primarily takes the form of an invasion of the space and time of one sphere (the home) by the priorities and preoccupations of the other (paid work). This can be illustrated in a whole range of ways. The high degree of temporal flexibility in terms of the numbers of hours worked turns out, in practice, to be a flexibility far more in one direction than in the other. While the demands, and attractions, of work are responded to by working during evenings, at weekends, over Bank Holidays and so forth – and it is expected that this will be so, it is the 'commitment' and 'flexibility' required to be an accepted member of this part of the economy – the 'time-in-lieu' thereby in principle accrued is far less often taken and indeed has to be more formally negotiated; the demands of home intrude into work far less than vice versa (see Henry and Massey 1995). Spatial boundaries are also dislocated as work is very frequently taken home. A high proportion of these employees have machines, modems and/or studies in the space of the domestic sphere but there is no equivalent presence of the concerns of home within the central space of paid work (at the most obvious level, for example, not one of the companies we investigated had a crèche). One of the company representatives we interviewed spoke of the employees being 'virtually here' (in the workplace) even when working at home because of the telecommunications links installed between the two places. Moreover, this raises a third and very significant aspect of this one-way invasion. A lot of our interviewees spoke of the scientists' difficulty in turning off thoughts about work, of not continuing to think about a problem even when physically doing something quite different. The men wondered if they should charge to the company time spent thinking in the bath. A few men and their partners spoke of episodes when he would get up in the middle of the night to go and fiddle with some puzzle. Men, partners and sometimes children commented on minds being elsewhere when notionally it was time for playing with the children or driving the car on a day out. Here there is a real 'spatial' split between mind and body; a capsule of 'virtual' time-space of work within the material place of the home. While the body performs the rituals of the domestic sphere, the mind is preoccupied with the interests and worries of work:

I am well aware of the fact that in many areas, that you are better having the 9–5pm and everything like that,

but I have never found it at all compatible with trying to work or trying to pursue a bit of research or a bit of development, to have to give up at the magic hour or whatever . . . and I mean you can't say to somebody you will think between 9 and 5pm and you will not think between 5.05pm and 8.55am.

This is eminently understandable and, in many ways, attractive: it is good to have paid employment which is interesting and it is a challenge to resist the compartmentalization of life into mutually sealed-off time-spaces.

But what is important is that once again this works in only one direction. While domestic time is porous, work time is not. Indeed, and this is the significant point, it *cannot* be so. While it is assumed that one may think about work while playing with the children or while out for the day with the partner, the reverse is not the case. Indeed, a reason quite frequently given for working late nights and weekends at the office is that the time-space is less disturbed then – even if other people are doing the same thing, there is less in the way of incoming phone calls and so forth. One of the dominant characteristics of this kind of work is that it demands, and induces, total concentration. The above quotation is interesting in its implication that 'thought' is involved only in paid work.¹⁰ Moreover, it is the kind of thought which requires a lack of intrusion; it is totally absorbing. In a sense, even the reservations to this 'all-work' atmosphere of the workplace reinforce its truth. Thus one or two workplaces had a gym and elaborate catering facilities on site, the aim being to aid rather than detract from the overall ability to concentrate. And in one company, partners – seemingly in despair at ever seeing their men – came into the office:

. . . they have children and wives and they are always retailing the complaints from their wives . . . This is a constant complaint . . . there is a perennial complaint that the partner never sees them and they are always in here. In fact, partners tend to come in here and work in the evenings because that's where the other one is; they have different kinds of jobs but they can bring their work with them and do it here.

However, it is hardly an invasion: she is conforming to the norms of the workplace; what she has brought in with her is her 'work', not the sphere of the domestic, and he can carry on with what he has to do.

This does not mean that levels of concentration within the workplace do not vary, nor that time-out

cannot be taken. Indeed time-in-lieu, trips to the shops, etc. provide occasional windows within the working day. But, within the workplace, everything – even the exercise of the body – is geared to the productivity of the intellect:

I was amazed when I went there – I'd been working at [a major corporation]. This huge factory in Lancashire had shut and I came down here to the interview with [a smaller company, Cambridge-based] and I walked up the stairway and on every floor there was a series of little offices and ramps around the edge and the middle of each floor was open and there was a ping-pong table or a snooker table and everybody seemed to be playing games and I thought that this is supposed to be a place of work – and then when I saw all the things they were doing – a chap [would] put his bat down and go off and design an IC in a little room in the corner.

What we have here, then, is the workplace constructed as a highly specialized envelope of space-time, into which the intrusion of other activities and interests is unwanted and limited.¹¹ For most of these scientists, however, 'the home' is constructed entirely differently. Both temporally and spatially, it is porous and, in particular, it is invaded by the sphere of paid work.

Abstract spaces

One way of beginning to conceptualize the difference between these two kinds of spaces is through the work of Henri Lefebvre. In his account of *The production of space* (1991), he characterizes the space of current western society as 'abstract space' and discusses (and criticizes), as one of its defining features, its fragmentation, its division into sub-spaces devoted to the performance of specialized activities. His historical analysis explains this process as the result of aspects both of modernity and capitalism on the one hand and of currently dominant forms of masculinity on the other. Although Lefebvre's historical account and the supposed newness of abstract spaces may be questioned, his examples of such specialized and fragmented spaces/ space-times resemble very strongly the specialized space-times constructed in high-tech workplaces. They seem to have many of the characteristics of abstract space: they are demarcated against an outside, they are specialized, they are masculine. Yet, in the story we are telling here, they are not coexisting with other similarly specialized and sealed-off time-spaces but with a time-space – that

of the domestic sphere – which is porous, which allows entry from other spheres, which is perhaps, in Lefebvre's terms, characteristic of an older and yet, possibly at the same time, a more potentially progressive kind of time-space. Lloyd (1984, 50), it might be recalled, contrasted the wholly rational sphere of reason/transcendence (i.e. evacuated of other things) with 'woman's task' of preserving 'the sphere of the *intermingling* of mind and body' (my emphasis).

Further, Lefebvre (1991, 191) pointedly asks

Is not social space always, and simultaneously, both a *field of action* (offering its extension to the deployment of projects and practical intentions) and a *basis of action* (a set of places whence energies derive and whither energies are directed).

In other words, social space is both an arena of action and potentially enabling/productive of further effects. Just so the places of work in these high-tech parts of the economy: they are not merely spaces where things may happen but spaces which, in the nature of their construction (as specialized, as closed-off from intrusion, and in the nature of the things in which they are specialized), have effects – in the structuring of the daily lives and the identities of the scientists who work within them. Most particularly, in their boundedness and in their dedication to abstract thought to the exclusion of other things, these workplaces both reflect and provide a material basis for the particular form of masculinity which hegemonizes this form of employment. Not only the nature of the work and the culture of the workplace but also the construction of the space of work itself, therefore, contributes to the moulding and reinforcement of this masculinity. As Lefebvre (1991, 89) writes:

The dominant tendency fragments space and cuts it up into pieces ... Specializations divide space among them and act upon its truncated parts, setting up mental barriers and practico-social frontiers.

Lefebvre would argue that the currently dominant tendency towards the homogenization/fragmentation and specialization of space is something which should be opposed. This relates to the second stage in the argument here about what is happening to the work/home boundary among the scientists of the Cambridge phenomenon.

For what has been discussed so far is an alteration in the boundary between home and work which

consists of nothing more than the spatio-temporal transgression by one sphere (one side of the dualism) into the other. As has been noted, this transgression is all one way but the second stage of the argument is that in whatever manner one interprets this 'blurring' of boundaries, it does not overcome the dualism itself. Yet it is the fact of the dichotomies (reason/non-reason; transcendence/immanence) which has been criticized as being part of that same mode of thinking which also polarizes genders and the characteristics so frequently ascribed to them. And it is the parallel fragmentation/specialization which came in for criticism from Lefebvre. What, then, can be learned about the possibility of unification from this study of Cambridge scientists?

Resistance

The characteristics which have been described above are traits of *masculinity*, not of men. As already implied, there is no simple homogeneity among the men we studied. However, these characteristics are strongly embedded within the culture of this part of the economy (with some variation in detail between different types of jobs). Moreover, the strength of this embeddedness means that these characteristics 'pull' all its participants towards them. Individual men have relations to these characteristics which are more or less celebratory or painful. Many of them recognize the need to negotiate the very different personas they inhabit at home and at work – the scientist with the new baby (quoted earlier) was doing just that. And what he was confronting there was precisely the difficulty of preventing his dominant self-conception as a scientist from completely overriding those other potential sides of himself. Other men actively try to resist this potential domination. Their number is small and their reasons varied. Most commonly, resistance is a response to stress or to strongly articulated objections on the part of the partner, or to a genuine sensitivity to the felt need of these men to live a more varied life, not to miss out on the children growing up and so forth.

Moreover, the resistance takes a particular form. It is almost entirely to do with working hours and with the time and space which work occupies rather than with wider characteristics of the job. It also takes place almost entirely at the individual level. These workplaces are not unionized. Moreover, at a more general social level, while there are trade-union campaigns and feminist arguments for a

shorter working day and week, they have as yet made very little progress. Certainly, there seems to have been no thoroughgoing cultural shift in favour of shorter working hours, in spite of the increasing proportion of employment which is part time. Indeed, since in these parts of the economy at least, some of the compulsion to work long days comes from the interest in and commitment to the work itself, it is not clear how such jobs and others like them relate to the wider arguments about working time. Given all this, it is the scientists individually who decide how they are going to respond to the pressures and attractions of their jobs, and how they will negotiate the work/home boundary and the different identities they may imply.

In this context, it is deeply ironic that one of the important mechanisms of resistance, and one adopted by a number of the men, is precisely to insist on the necessity for and the impermeability of the boundary between work and home. Given that the tendency is for work to invade home life, one obvious mechanism for resistance is to protect home life from intrusion. This happens in a number of ways. Some men (a few only but then the resisters in total are not a high proportion of the whole) have decided not to take work home, thereby preserving the space of home and the time spent in it from the intrusion of the demands of paid work. Sometimes this will involve an intrusion in time terms, maybe involving staying longer at the workplace in order to finish a task there rather than take it home. Resistance here is to the violation of the *space* of home. Other men, though again few, have made themselves rules about *time* and insist on keeping to a regular daily routine and on arriving and leaving the workplace at set times. Over the long term, it is possible that this will be detrimental to their careers (see Henry and Massey 1995) but the men are aware of this and indeed in some cases have adopted the strategy because of other problems (personal stress, problems with health or personal relationships) which had been produced by a previous commitment to the high pressure and long hours typical of these companies in general. It must be emphasized that this is not the only way of coping with the pressures of this work. Other scientists, and couples, have found alternative ways of dealing with such demands and compulsions but what is significant about resistance based on time and space is its irony. The 'problem', as we have argued above, has been posed through the working out in everyday life of some of the major dualisms

of western ways of thinking. Yet, in the absence of collective resistance, legislative action or wider cultural shifts, individual attempts to deal with some of the conflicts thus provoked may result in a reinforcement of the expression of those very dualisms. The dichotomies are rigidified in order to protect one sphere (the home, the 'rest of life') from invasion by the other (scientific abstraction, transcendence). The problems posed by the dualisms result in their reinforcement.

Conclusions

The last section concluded on one of a number of ironies analysed in the paper: that those who were attempting to resist the domination of their lives by one side of a dualistic separation most often found themselves reinforcing the divide between the two poles of the dualism. What such a 'Catch-22' indicates is that the way out of the conundra does not lie at that level. The 'solution' must be sought in a deeper challenge to the situation.

Similarly, the empirical material discussed here raises a number of confusions and complexities around the politics of campaigns for a shorter working day/week. They are issues too which relate as much to academe, especially in its present increasingly intensified and individually competitive form, as they do to the high-tech work discussed in the paper. They are issues which touched me personally as an academic and which made me think about my own life as I did the research. It is a privilege to have work which we find interesting. At a recent meeting of feminist academics, where we discussed an early version of this paper, *none* of us wanted our 'work' to be restricted to 35 specified hours in each week. While all of us wanted to resist the current pressures on hours produced by the reinforcement of competitive structures, we did not want to lose either the feeling of autonomous commitment or the possibility of temporal flexibility. But neither did we like the way in which this 'flexibility' currently works in practice – the pressure towards what can only be called a competitive workaholism and the inability to keep things under control. These are things which we as academics, as well as those in the high-technology sectors discussed here, need to confront. For when an important element of the pressure on time results from personal commitment on the one hand and individualized competition on the other, as well as from

sectoral and workplace cultures, how can any form of collective resistance be organized?

In the longer term, the aim must be to push the questioning further, to try to find those solutions which may exist at 'deeper' levels. In particular, I suggest, it means questioning the dualisms themselves. Instead of endlessly trying to juggle incompatibilities and to resolve ambiguities which, in reality, point to contradictions, it is important to undermine and disrupt the polarizations which are producing the problem in the first place. In philosophy and, in particular, in feminist critical philosophy, this position is by now well established. The aim in general now is not only to valorize the previously deprioritized pole of a dualism (as Simone de Beauvoir did (see earlier)) but to undermine the dualistic structure altogether.

Such fundamental critiques may be carried into other areas. Thus, as indicated in the early part of this paper, after years of criticizing de-skilling within industry, I find it difficult to criticize jobs for being too absorbing. Another irony indeed! However, as was hinted there, it may be that this very dilemma suggests that the issue would be better posed in another way. Rather than being critical of de-skilling or super-skilling as such, it is the polarization between them which should be the focus of critical attention. What is at issue here – and it is an issue which again involves us as academics – is the *social division* between conception and execution, between intellectuals and the rest.

What I find more problematical as a political issue is the division of the lives of the scientists described in this paper between abstract and completely 'mental' labour on the one hand and the 'rest of life' on the other. In the version of this paper sent to referees, I had unreservedly applauded those few attempts which we had come across in our research to resist the compartmentalization of life into mutually sealed-off time-spaces. At least one referee questioned this, asking simply 'why is it good to resist compartmentalization?' And I know for myself that one thing I thoroughly enjoy is to sit down in the secluded and excluding space of the Reading Room at the British Museum and devote myself entirely to thinking and writing. And yet – to return to Lefebvre – do we want lives sectioned-off into compartments, into exclusive time-spaces: for the intellect, for leisure, for shopping ... ?

This dilemma might relate to, and be partially addressed by, a consideration of the major dualism discussed in this paper – that in which 'science' itself

is involved. It is perhaps that the problem lies most fundamentally in the postulated separation of the isolated intellect from the rest of one's being and calling the product of the working of that (supposedly) isolated intellect, 'knowledge'. Among many others, Ho (1993, 168) has argued for an alternative:

This manner of knowing – with one's entire being, rather than just the isolated intellect – is foreign to the scientific tradition of the west. But ... it is the only authentic way of knowing, if we [are] to follow to logical conclusion the implications of the development of western scientific ideas since the beginning of the present century. We have come full circle to validating the participatory framework that is universal to all indigenous knowledge systems the world over. I find this very agreeable and quite exciting.

The real irony, then, may be that the long-standing western (though not only western) dualism between abstract thought and materiality/the body may lead through its own logic to its own undermining. And it is on that dualism that much of the separation within the economy between conception and execution – and thus these 'high-tech' jobs themselves – has been founded.

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Notes

1. Only one aspect of these relations is explored in this paper. The work forms part of a wider project on high technology and the social relations which surround it. This research was funded by the ESRC: R000233004, 'High-status growth? Aspects of home and work around high-technology sectors' and is being carried out with Nick Henry, now at the Department of Geography, University of Birmingham. The project forms part of a wider programme of five pieces of research on the nature and consequences of growth in the south-east of

England in the 1980s. The programme is based in the Geography Discipline, in the Faculty of Social Sciences, The Open University, from where further information and a series of Occasional Papers are available.

2. The first two of these reasons are explored in more detail in Henry and Massey (1995). As part of the research, we interviewed representatives of nineteen companies, 60 male scientists and 38 partners, all of whom were female. 'Partnership' was defined in terms of cohabitation. About one-third of the scientists were not cohabiting. The quotations from interviews which are cited in this paper have been selected as *symptomatic*. They capture, or express with precision, points or attitudes which were typical or widely prevalent or, if indicated in the text, which characterized attitudes held by some of the interviewees.
3. In a paper currently in production, this characterization of the work as 'flexible' is itself being questioned. I am grateful to one of the referees for extended and constructive thoughts on aspects of this issue.
4. One result of this absorption in their work is, of course, that these men have less time to spare than they might otherwise have for life in the domestic sphere. A future paper deals directly with this issue. In discussions on the present paper, Cynthia Cockburn (pers. comm.) wondered 'whether the time stolen by these men to sustain their addictive habit may actually not be stolen from the home (other men don't spend more time than they have to in the home) but rather stolen from pub, club and trade union'. There is probably a lot in this. The point in the present paper is precisely to emphasize that what characterizes these sectors is a *particular form* of masculinity.
5. Cynthia Cockburn (1985) has pointed to some of the inconsistencies and contradictions even here – see her treatment of the concept of 'intuition' and of the scientists' ambiguous relation to it. Indeed, the very fact that the men 'really love' their work, are 'obsessive' and so forth, touches on realms outside that of pure reason. But, as pointed out in the opening paragraph, consistency has never been the outstanding attribute of the functioning of these dualisms, nor has inconsistency seemed much impediment to their social power.
6. Similar worlds have been described by Tracey Kidder (1982) and Sherry Turkle (1984).
7. These interconnections between gender analysis and aspects of economic growth, and, specifically, economic geography, are explored further in a forthcoming paper.
8. While the home/work distinction may validly be read as an instantiation of this dichotomy, it must

be stressed that there is far more to the possibilities of 'immanence' than having children and doing the housework.

9. The work of 'domestic labour', who performs it and how, and the complex intrahousehold negotiations over it, is the subject of another forthcoming paper.
10. This view was reinforced in some cases by the contrast in attitude to the skills of paid work on the one hand and the domestic sphere on the other. Thus, in accounting for their partners doing almost all of the housework, a number of scientists put it down to the fact that 'she's better at it'. The interesting thing here is that there seems to be no understanding that this skill is one which could be learned. In contrast to the highly intellectual paid jobs, for which much learning was necessary, this skill seems to be seen, although *implicitly*, as innate.
11. This is broadly true of most workplaces, though to different degrees. The windowless boxes of so many modern factories precisely demonstrate the desire not to let the eye/mind wander 'outside' during working hours. But in the kinds of employment under discussion here, together with some others, it is especially marked.

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